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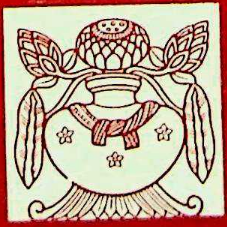
The
PATOLU
of
GUJARAT

by

A. N. GULATI

for sometime Director

Museum of Textiles, Ahmedabad



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A. N. Gulati

THE PATOLU OF GUJARAT

Introduction

The *patolu*[1] is a rich and gaudy member of the big family of silken fabrics called *saris*. It is a wedding *sari* in Gujarat (India), and is used for a similar purpose in Indonesia. Its extremely difficult workmanship, gorgeous colouration, attractive appearance and durability make it much coveted and even more sought after. Every Gujarati lady longs to have a *patolu* rather than any other *sari*. This desire is forcefully expressed in a verse by Premanand which runs in Gujarati as below:–

"Lais patola sar sari nahin pehrun"[2].

It means, "I must get a *patolu* and will not wear a *sari*."

This lovely fabric resembles a printed cloth, but unlike it, it has no reverse side and has an equal intensity and similarity of design on both sides. It is in fact, not at all printed—its multitude of figures being all produced in weave. Its warp and weft are both dyed in a variegated range of shades along the whole length of each thread by the technique of tie–dyeing or knot dyeing. This technique is practised in India not only on hanks of cotton yarn which have a religious sanctity for Hindus, but also in warp or weft alone of union fabrics of silk and cotton called *mushru*, *i. e.*, permitted by religious law of the Muslims, in both warp and weft as in the *patolu* of Gujarati Hindus and on cloth in the form of *gharchola* and other *bandhana* work of several types acceptable to both the Hindus and Muslims residing notably in parts of Rajasthan and Bombay states.

The technique of tie–dyeing is called *bandhana* in India, and *ikating* in Indonesia. The latter word has been accepted in European languages like the word *batik* which designates the Javanese way of printing cloth. *Ikating* is practised in both the hemispheres in one form or the other. The similarity of the technique in many different places, far apart, makes one marvel at the manner by which the craft may have travelled across the high seas to achieve its distribution, when sea voyages were so difficult and risky.

This beautiful cottage craft of the Indian weavers which appears to have been thriving in Gujarat for nearly a thousand years, well appreciated within the country and no less patronised abroad, is unfortunately gradually dying out. It is all the more sad to find that the very features for which the *patolu* has been extolled such as (i) its colour scheme, (ii) rich configuration, (iii) dexterity of the weaver, (iv) long time taken at weaving it, *etc.* are proving great handicaps in the modern times. In the face of the new ideas of colour schemes and decoration imbibed from the West, and the present day trends of (i) improving the loom efficiency, (ii) lowering the cost of production of woven cloth, (iii) less supervision, and (iv) substitution of weaving by faster methods of cloth production such as knitting and felting, it is not merely patronisation from the public, but a progressive outlook of the manufacturer which can save the art from extinction. Sentiment alone makes a poor appeal. If the *patolu* has to hold its own among other decorative fabrics, where it has so far held a high position, its technique has to be thoroughly understood, revised and improved, its designs modernised, its cost lowered and its appliances mechanised.

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[1] In Gujarati language the word *patolu* is the singular form of *patola* which is the plural.

[2] Premanand, 17th century A. D., *Kunvarbai nu Mameru*.

With this end in view, a thorough search has been made in the available literature and some necessary field-work has been carried out to learn the details of the technique of *patolu* manufacture, round which some type of trade-secret air has always prevailed. Incidentally some information is also gathered on the etymology and history of the word *patolu* and the fabric of the same name respectively. Incidence of closely allied types of fabrics in other parts of the world points out not only certain independent sub-lines of evolutions in the craft but also a common origin. The facts thus gathered are collected in what follows, and a few suggestions are made for what they are worth, to modernise the *patolu.*

Etymology of the word Patolu

The word *patolu* is evidently derived from the word *patta* which means silk in all modern Indian languages. In order, therefore, to trace the origin of the word *patolu*, one has necessarily to look for the word *patta* in Sanskrit, which has profoundly influenced the vocabulary of all Indian languages to a more or less extent. It is interesting to find that no word conveying the sense of silk occurs in Vedic literature[1]. It is, however, interesting to note here that the petticoat made of *kusa* is worn by the wife of a sacrificer as mentioned in the *Satapatha Brahmana* (V. 2. 1. 8). The word *kusa* here is interpreted as silk by Sāyana, though it could as well mean *kusa* grass. If Sāyana's interpretation is correct, then the knowledge of silk in the country could be pushed back to 800 B. C. Manu[2], however, mentions *patta* but differentiates it from *kauseya* meaning silk. *The Mahabharata* distinguishes *karpasa* or cotton cloth from silk. *The Ramayana* mentions *kauseya* only. *Amarkosa*, the fountain head of the Sanskrit vocabulary, includes the word *kauseya* only for silk. The word *patta* meaning cloth, however, occurs in this lexicon. But it is mentioned in *Acharanga sutra* (II, 5. 1. 4.) and *Brihat Kalpa Sutra Bhashya* (II, 3662) where it is explained as wild silk as opposed to cocoon silk. Thus, although originally the word *patta* meant cloth, it began early to be used in the sense of silk. It is possible that the early contact of Aryans with both Chinese and Dravidians extended the use of *patta* from cloth to silk also about fourth or fifth century B. C.

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[1] Macdonell, reported by Ray, 1917, Textile Industry in Ancient India, *J. Bihar & Orissa Res. Soc.*, Vol. III, Part e, Page 213.

[2] *Manu's Laws*, Chap. 5.

The word *china-patta* occurs side by side with *kauseya* in *Arthasastra*[1] apparently to distinguish Chinese cloth or silk from cocoon silk or *kauseya. Susruta* (4th century A. D.), records three words for silk *viz., kauseya, patrorna* and *china-patta*. The word *patta* in the sense of silk further occurs quite frequently in classical literature of the 7th century A. D. and later, such as *Bhattikavya* and *Kalpasutra*. Sanskrit–English Dictionary by Monier Williams also includes the word *patta* for silk and refers to *kavya* literature and *Pancha Tantra* (4th & 5th century A. D.) as the sources. Both the words *i. e., patta* and *patola* occur in the lexicon *Medini* (13th Century A. D.) This work is based on another dictionary called *Visva Prakasa* which is dated at 1111 A. D. These words are also included in *Sabda Kalpadrama* which defines *patola* as a variety of garment.

This search shows that the word *patta* for silk was adopted in Sanskrit language from some existing source in the 4th or 5th century B. C., but it began to be freely used in Sanskrit only in 4th Century A. D. It further shows that the word *patolu* meaning a variegated silken cloth, came to be included in Sanskrit dictionaries in the early 12th century.. The word *kusa* as a forerunner of *kauseya* is suggested by Sāyana, thus taking the mention of silk to 800 B. C. in Indian litrerature.

It is further interesting to find that the word *patta* means silk in Tamil, Malayam and Kanarese languages. In the last named language, however, the modern word is *reshme* for silk. Yule[2] derives the word *patola* from the Kanarese word *pattuda* which means silk cloth. He further quotes references where *patola* is equated with coloured cotton and silk cloth, with silk cloth made at Cambay and Malacca and with a garment worn below the waist. *Patola* in Panjabi stands for garment of a doll. It means cloth made from the fibres of *Gerbera lanuginosa*[3] in Garhwal. In Gujarat, the word becomes a proper noun meaning silken *sari* prepared from tie–dyed warp and weft. The word *patola* designates a wedding garment in Indonesia, but in all probability it is adopted there from India. In Indo-China a closely allied word *sampathol* also stands for a silk *ikat*. In India fabrics of the description of *patola* are also made in Hyderabad Deccan and Orissa, although they are not called by that name there.

Two other derivations of the word *patola* are found in literature. 1. Prof.

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[1] *Arthasastra* by Kautilya translated by Shama Shastry (4th century B. C.)

[2] Yule, *Hobson Jobson*, pp. 686, 1516, 1522, 1552.

[3] G. Watt, *Dictionary of Economic Products of India*, Vol. III, p. 490.

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K. T. Shah[1] writing on Indian Costumes, opines that the word *patrorna* occuring in Kalidasa's *Malavikagnimitra* (4th century A.D.) is the basic word from which the Gujarati word *patolu* originated. The word *patrorna* as used in *Arthasastra* indicated some kind of leaf wool or leaf fibre[2], but in *Susruta*, the word has been referred to as a kind of silk though different from *kauseya*. The transformation of the word *patrorna* to *patola* may have taken place through the word *pattuda* of the Dravidian languages. A problem that arises out of this discussion, *i. e.*, the identification of the three types of silk mentioned by *Susruta* with the now known varieties, *viz.*, *eri*, *muga*, and *tussar*, will however, be deferred to a later occasion.

2. Sri G. U. Patel[3] suggested the derivation of the *patola* from a Sanskrit word *patolika* meaning a colour box. In this very sense *patolika* is used in the *Kamasutra* (III, 3,14).

It may be mentioned here that the word *patoli* is used in Rajputana now to denote a colour box, notably the one containing red colour which is used by married ladies in the parting of their hair. The word *patalika* which may perhaps be connected with *patolika*. has been traced by Dr. Motichandra to *Brahmanjala sutra* where it means a flowered carpet or bed spread.

Yet another derivation suggested by a learned friend, Sri K. K. Sastri of the Gujarat Vernacular Society, Ahmedabad, may also be mentioned here. He derives the word *patolu* in the following manner: *Pattakulkam—Patta-ullam—Patta-ulaun—Pattulun--Pattolu*, where the word *patta* stands for silk and the suffix *kul* means cloth. Although the latter word does not occur in M. William's Sanskrit-English Dictionary, Mr. Sastri opines that the word can be derived from the word *kaulik* meaning a weaver. The word *pattakul* meaning silk cloth is well known in Gujarati language.

The origin of the Panjabi word *patole* to mean garments of a doll may be derived from the Sanskrit word *pattavali* meaning a collection of clothes. In fact, the word *patola* could have originated from the Sanskrit word *patta* for cloth, but how it came to be identified with silk would in that case be difficult to explain.

Antiquity of Patolu in India

Encyclopaedia Brittanica[4] writing about *patolas* and *ikats* under textiles states,

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[1] K. T. Shah, *Vasant Rajat Mahotsva Smarak Granth*, p. 22-31, 1927.

[2] The *patrorna* in the Arthsastra is the fibre obtained from the bark of Naga, Likucha, Bakul, etc. It is used in the same sense in early Jain literature. (*Life in Ancient India as depicted in the Jain Canons*, p. 129). It is possible that in later times when *patrorna* became obsolete, its epithet was transferred to silk. Tulsidasa in the later 16th century uses *patora* for silk.

[3] G. U. Patel, *Nabhovani* (Radio Listener), Baroda, dated 16th April 1949.

[4] *Encyclopaedia Brittanica*, Vol. 22, p. 5, 1947.

"From the sporadic distribution of the method, it may be inferred that it is very ancient and perhaps of Indian origin". Ackermann[1] points out, "The use of the technique for stripes had, however, had quite a long history, for some of the costumes in the Ajanta Cave paintings are unmistakably ikat stripes. Probably the technique flourished, if it did not originate in Turkistan, is also strongly suggested by the fact that ikat fabrics have been known both in India and Persia by the Turkic word *alejah* meaning originally variegated". It may be pointed out that the word *alejah* now means "high place".

The earliest mention of *patolu* according to Dr. Motichandra occurs in the list of cloth and carpets in the *Brahmanjala Sutra* ...... where *patalika* is explained by Buddha Ghosha as flowered carpet or bed-spread. If his identification of *patolu* with *patalika* is accepted, the antiquity of the former goes back to fourth century B.C. That this kind of artistic silk weaving continued is further supported by the occurence of the word *vichitra patolaka* in the *Lalita Vistara* (ed. by R.R. Mitra p. 113) which belongs to the first or second century A.D.

Regarding the use of the tie-dyed cloth in the dresses painted in Ajanta, Dr. Motichandra[2] remarks, "Tye-dyed material was greatly in demand and that stripes, ladders and chequers were common patterns". In the same text he also refers to the inscription added in 473-74 A.D. to the Sun temple built by the silk weavers in 437-38 A.D. at Mandasor in Rajputana during the reign of Kumaragupta. He points out that in this description, the weavers have beautifully expressed their just pride towards their profession and the high quality of their manufactured goods. Although this inscription which runs as below does not include the word *patola* actually, Dr. Motichandra is of opinion that the description indicates patola-like fabrics.

> "Tarunya – kantyupacitopi – suvarna – hara – tambula – puspavidhinasamalamkrtopi – narijanah priyamupaiti-na tavad, agrasrasyam yavanna - pattamaya - vastra - yugani dhatte sparsvata varnantara - vibhaga citrena netrasubhagena yaih sakalamidam ksititalam alamkritam pattavastrena". *Ind. Anti. XV, p. 197.*

The inscription further reveals that the silk weavers migrated to Mandasor from Latadesa, a stretch of land which corresponds to the west coast of India around Broach.

Similarly, he also suggests that the soft, figured silks presented by the ruler of Assam to Sri Harsa in the 7th century A. D., may again be *patolas*[3] as these have a softer texture than other figured cloths such as brocades. He also states,

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[1] Ackermann, *A Survey of Persian Art*, p. 204

[2] Motichandra, *Jl. Ind. Soc. Ori. Arts Vol. XII, pp. 1-97.*

[3] The possibility of such silks being printed is not ruled out by Dr. Motichandra.

"In the *Harsacarita*, the tie–dyed cloth, *bandhani* or *cundari*, as is known in Gujarati and Hindi respectively, is called '*pulakbandha*'. Ladies skirts were made of it". These statements on the one hand establish that the silk weaving was more ancient in Latadesa than in Rajputana, and on the other that tie–dyeing was a well known art in the 7th centnry A.D. Further, silk weaving commenced in Rajputana in the 5th century and some kind of coloured and figured silks were made there.

As informed by Dr. V. S. Agrawala, *Manasollasa* (Vol. II. p 89) also contains a referance to cloth dyed by tying threads. This verse which reads as below can, however, refer to both *patolu* or *cundari*.

"Tautubandha–suraktani nanavarnanchitianicha." He further points outthat the words, "Allikakula jatani" refer to Shri Kakul or Chicacole in Orissa which was known as Kakul in Mughal times and even today in the local languages.

Apart from these allusions, historical records left by Megasthenes in third century B.C., Arrian in second century A.D., Fa Hsien in fourth century A.D., Yuan Chwang seventh century A.D., and Ibn Batuta in the fourteenth century A.D., do not include the *patola* among the many types of cloth mentioned by them as used in India.The *patola* began appearing in the account of European travellers from 1516. Barbosa (1516) called it a coloured cotton or silk; Correa (1520) speaks about *patolas* of silk made at Cambay which were highly priced at Malacca; it occurs in Pinto (1545). Castanheda says that the Indians went naked upward the waist but below they wore clothes of silk and cotton called *patolas*; it is called *patola* by Birdwood (1605) and *patollas* by Peyton (1614). (See Hobson Jobson, Patola).

A letter dated 1616 (*Letters received from the East India Co.* Vol. IV p. 32) mentions *patolas* bought by the English merchants at Surat. Tavernier[1] (1676) also states, "Thirdly *patolas* which are stuffs of silk, very soft, decorated all over with flowers of different colours are manufactured at Ahmedabad. They vary in price from 8 to 40 ruppees the piece. This is one of the profitable investments of the Dutch, who do not permit any member of their company to engage in this private trade. They are exported to the Philippines, Borneo, Java, Sumatra and other neighbouring countries". After the discovery of the sea route to India, it is possible that other European nations were also trading in Indian commodities beside the Dutch. The part played by the Dutch, Portuguese, and French in disseminating Indian goods in Europe and in other countries could not be insignificant. But the documentary proofs in the languages of the above people are not easily accessible to us. Who took the *patola* or its technique where and when would be an interesting inquiry.

Coming to the Gujarati literature, it is noticed that the fabric *patolu* is mentioned by Premanand, a Gujarati poet of the seventeenth century. In one of his verses, Narsi Mehta[1], who wrote in the middle of 15th century stated "Navghat ghat patoli ne pamri" meaning newly made *patolas* and silken shawls.

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[1] *Travels in India*, Oxford University Press p. 3.

The word *patolu* also occurs in two couplets attributed to Ranakdevi, the wife of Ra Khengar, the ruler of Junagadh in the eleventh century A.D. It is said that Ranakdevi was forcibly brought to Wadhwan by Sidh Raj Jayasingh the ruler of Gujarat after killing her husband. She uttered these couplets while wailing over her husband's corpse, and in protest to accept Siddha Raja as her future husband. The said couplets are:

(i) "Vaye pharke muchadi rayana jhabuke dant, juvo patola valio, lobadi vali no kant".

"The moustache moves with air, teeth sparkle like gems, O! wearers of *patola*, see the husband of a *lobadi* wearer".

(ii) "Balun Pattan desa jisen patola nipje, garvo sorath desa lakhe in male lobadi".

"I will burn the town of Pattan where patolas are manufactured, Saurastra is good where woollen saris are available."

On the strength of these couplets, Shri K. B. Dave[2] is of opinion that Pattan was known for its *patolas* in the 11th century. In fact in a work called *Manasollasa*[3] four towns known for cloth manufacture in the 12th century are mentioned. These towns according to Dr. Motichandra are (i) Anahilpura Pattana in North Gujarat, (ii) Mulsthana or Multan, (iii) Panch Pattan or Pak Pattan in the Panjab and (iv) Tondidesa or Malabar coastal country. The types of cloth described in this work, however, do not include patolas clearly.

From some references of European and Indian origin quoted above, it seems that *patolu* at least by the 16th century did not signify a *sari* worn by women but was the generic name for a kind of figured silk and cotton worn by men and women alike.

All these observations lead to the conclusion that *patolu* was well known in the 11th century though its existence could be well proved from at least 4th century B.C.; tie-dyeing was known in the seventh century, and silk weaving earlier than fifth century B.C. in India. The *patolu* technique thus must have been evolved from the fifth century onwards. It is pertinent in this connection to mention the use of tie-dyed thread—*nadachadi* (Gujarati), *mauli* (Punjabi), *kilava* (Hindi, U. P.) for ceremonial representation of cloth by Hindus notably on the occasion of marriage, worship and *raksha bandhana.* As grey thread is used in ceremonies relating to death, the presence of colour on thread is in all likelihood associated with happy ceremonies, and thus considered a mark of good luck. When this practice began, and whether it preceded the tie-dyed cloth or followed it, it is difficult to determine. The facts about it seem to have been lost in antiquity. However, this much can be stated with some certainty that the use of tie-dyed thread or cloth has been always considered to be lucky and associated with gaiety on festive occasions and therefore of some sanctity. Such thread does not appear to be mentioned in Vedic system of Aryan marriage, and therefore, it is likely that it originated in Puranic period.

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[1] Majumdar, 1927, An Introduction to Bhakt Kavi Narsi Mehta, *Vasant Rajut Mahotsava Smark Granth.*

[2] 'Salvi's of Pattan', *Prasthan,* 1935 A.D., pp. 182-183.

[3] *Manasollasa* (C. 1130), Vol. 2, p. 88-90. Section dealing with *Vastrabhoga* of King Somesvara. Geakward Oriental Series, Baroda, 1939.
This reference was kindly given by my friend Prof. P. K. Gode, Curator, Bhandarkar, Oriental Research Institute, Poona.

Origin of Patolu Weaving in India

Origin of an old art in any place is invariably found to be associated with (i) abundance of raw material, (ii) cultural level of the people, and (iii) royal patronage. Taking the abundance of silk which is the raw material of the *patola*, one reads with great interest that it was in the Himalayan range that nature provided a home[1] for the silk worm feeding on mulberry. How the art of rearing silkworm went to China and was adopted in the plains of India is not quite known. Nevertheless, Kasi or Benares is the oldest centre of weaving mentioned in the Indian classical literature. Weaving was also known to the pre-Aryan civilisation of Mohenjo Daro[2] (Sind) though in cotton for certain and possibly also in wool, but certainly not in silk. Even in the 3rd century B.C. Kautilya[3] differentiated silk or *kauseya* from *chinapatta* or Chinese cloth or silk. Susruta mentions two other types of indigenous silks in India. Apparently India had an antiquity in silk culture too. In the modern times silk culture is known in Kashmir, Bengal, and Mysore; whereas its manufacture is known in other parts of the country too. For example, although Western Coast of India produces no silk of its own, silks manufactured in this region (Broach) were known even in the beginning of the Christian era[4]. The country round Broach, then known as Latadesa has already been mentioned as the original home of the silk weavers who migrated to Mandasor in Malwa in the 5th century A.D. Obviously the migrations of the silk weavers were guided by the demands of the ruling princes.

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[1] E. Handschin, *Ciba Review* No. 53, November 1946, Basle. P. 190.

[2] Marshal, *Mohenjo Daro and Indus Civilisation*, London 1931.

[3] Kautilya's *Arthasastra* translated by Shama Sastry.

[4] *Periplus of the Erythrean Sea.* Trans. by W. H. Schoff, 1932. Longmans Green & Co., London. P. 45.

As will be seen later, *patolu*–like double ikats or other ikats are known from Benares and Hyderabad (Deccan) even today, while other ikats have been recorded from Tanjore, Kumbakonam, Ventapallum and Trichinopoly in the South and Kathmandu (Nepal) in the North. *Patolas* are also woven in Orissa today and Orissa has been a very ancient weaving centre as suggested by Gangoly[1]. He argues that because Indians from the kingdom of Kalinga made sea voyages to Java in the 3rd century B.C., they are still known as *klings* in Java. Similarly because weavers from Orissa went and settled in South India in that remote age, in Tamil cloth is still called *Kalinga*. Looking at the distribution of silk ikats in India, it appears probable, that the art of *patola* weaving from tie–dyed warp and weft, if it originated in Benares, which is the oldest known silk weaving centre in India, migrated to other parts of India with the weavers from Benares who by invitation or force of the ruling princes must have migrated to other parts of India in all directions. Even if some migrations of silk weavers originally from Benares may be proved, it is difficult to rule out the possibility that the art of making double ikats from tie–dyed warp and weft originated elsewhere and did not travel back to Benares where its relic may be seen today. Randle[2] points out that silk weavers in South India trace their origin from Saurastra and still use Saurastri language called Patnuli or *Khatri*. They have, however, acquired many Tamil, Telugu, and Kanarese words in their vocabulary as a result of their long cultural contact with the Dravidian people speaking these languages. They are mentioned to have migrated first to Deogiri in A.D. 1187–8, then to Vijayanagar which was founded in 1316 A.D. and finally in and around Tanjore, Madura, Dindigal and other places in Tamil speaking country, as a result of the Muslim oppression in Saurastra. He suggests that these weavers also called *patnulkaranas* can be reasonably linked with the weavers of Mandasor whom he considers as their direct ancestors or at least their collaterals.

It is interesting to mention that the patola weavers at Pattan have been traced to both northern and southern countries by Dave[3]. The following three legends, the first of which is given by Desai[4] and the remaining two by Dave will be read with interest in this connection.

(i) Mularaja, the ruler of Gujarat in the 10th century A.D. is said to have brought the Salvis from the south and settled them at Pattan on the same social status as the Leva Patidars. (ii) Mayanella Devi, the mother of Siddha Raja Jaya Singh

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[1] The story of a cotton print from Orirsa, *Jl. Bihar & Orissa* Res. Soc. Vol. V. p, 325.

[2] Randle, H. N., The Saurashtrans of South India, *Jl. Roy. Asiatic soc., of Great Britain & Ireland*. Oct. 1944, pp. 151–164.

[3] 'Salvis of Pattan', *Prasthan* v. s. 1991 (1935 A. D.), pp. 182–183.

[4] *Kadi Prant Sarv Sangraha*, Baroda State Publication.

(11th century A.D.) and the daughter of Jayakesi, the ruler of Chanderpur, a town in the south, is also mentioned to have brought the said Salvis to Pattan, presumably to manufacture for her the silken garments. (iii) Kumarpala (12th century A.D.), the successor of Siddha Raja Jaya Singh is said to have requested the king of Sapadlaksh (Sambhar lake) according to Sastri[1] for some *uttariya* cloth for covering the shoulders. But as the latter refused to comply, Kumarapala defeated him and brought 700 Salvis from Bimbora to Pattan.

This study indicates that the migrations of silk weavers began earlier than the Christian era and appear to have taken place to and fro in some directions. Thus Benares, Broach, Mandasor, Pancha Pattana (Modern Pak Pattan in Panjab), Samalpur (Orissa), Hyderabad (Deccan) and several towns in the province of Madras seem to be all inhabited by the same race of silk weavers who have been called Salvis in Gujarat, Thana (Bombay) and Hyderabad (Deccan), and Saulis in Madras Province. Both the words appear to be derived from the word *shal* meaning the loom. Inquiries made in Orissa indicate that the Hindu weavers of Samalpur who make *odhanis* by the *patola* technique claim their origin from the country around Delhi.

Description of Patolu

Size: The *patolu* is generally woven in *sari* length, which used to be four and a half yards in length, and had a width of 45 to 47″. These *saris* are now available in five, six or even eight yard lengths with a width of 54 inches.

Raw Material: It is essentially silk. In good old days, the silk employed used to be imported from China, but now Bangalore silk is used. In the opinion of the weavers at Pattan, the latter is considered better than the former. The *patolas* manufactured for export to Java contain a little cotton too in the borders. *Tussah* is also used to produce a variety of *patolu.* Gold thread is introduced in high class *patolas* in the *palav* and the gold covers a width of 5 to 10 inches or any width demanded by a prospective buyer.

Ornamentation: The *patolu* is ornamented with stylised woven figures which are made neither by the introduction of extra warps or wefts, nor by the hange in weave. The figures are singularly done in plain weave like the rest of the cloth. The simplest and the most ancient of weaves appears to be at its best in this fabric. Be it the tree, leaf, flower, creeper, animal or human form or even geometrical configurations, the colour lines are quite often done in small squares. It is rare though not quite unknown to see a design in *patola* woven otherwise. Possibly it is

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1. D. K. Shastri, of *Kumarpala Prabhanda* by Merutunga (V. S. 1361), Forbes Gujarati Sabha Granthavali No. 11, p. 45.

not a part of the technique followed at Pattan as it is in Orissa and Hyderabad as shown in Plates 1a and 2a.

The woven figures are obtained by the juxtaposition of similarly dyed shades on equal lengths of warp and weft with such dexterity that on interlacing perfect figures are formed. The warp and weft are tie–dyed into several shades along the length of each thread over prescribed lengths so that they go to form the desired figures.

Colours: The colours used until recently were natural dyes, but they have since been replaced by synthetic dyes manufactured by the I.C.I., the Ciba Ltd. or other foreign concerns. The shades met with in *patolas* are (i) maroon, (ii) yellow, (iii) green (iv) blue (v) red (vi) claret and (vii) white. Each shade is obtained either by a single application or by super–imposition of one shade over the other. While one shade is being applied, the other parts of the yarn are occluded by tying threads over them. The colours used to be so fast that a poet remarked "Padi patole bhat phate pan phite nahin", *i. e.*, included in a *patola* design may be torn but will not fade.

Picks and ends: The picks and ends counted from a few of the many pieces in the collection of the Calico Museum of Textlies are given below:—

Description of Piece	*Museum Serial No.*	*Ends.*	*Picks.*	*Length* x *width.*	*Weight of the whole piece.*
1. *Popat–Kunjar bhat*	103	58	48	5′–6″ x 2′–10″	3 oz.
2. *Phul bhat*	105	72	34	1′–6″ x 3′–2″	1·46 oz.
3. *Chowkhadi bhat*	106	88	38	14′–2″ x 3′–8″	17·93 oz.
4. ,,	107	88	44	1′–6″ x 3′–2″	1·19 oz.
5. *Geometrical design*	108	54	41	2′–1″ x 2′–1″	0 89 oz.
6. *Devnagari alphabet*	109	54	36	5′–2″ x 3′–11″	2·50 oz.
7. *Dakshini Sari*	110	78	38	24′–7″ x 3′–4″	33·04 oz.
8. *Plain body Popat–kunjar* in border	111	58	50	11′–3·5″ x 4′–3″	8·80 oz.
9. *Pan bhat*	112	80	36	4′–9·5″ x 2′–8″	2·14 oz.
10. Floral creeper, pea-cock & birds in body & camel, elephant, and flower in border (*odhani*)	121	58	60	8′–10·5″ x 4′–8″	8·69 oz.

The overall effect: The colours are quite happily harmonised in *patolas*, and impart to them vivid, gorgeous and attractive appearance. Rich in the variety of figures included in different designs, colourful, soft to feel, lustrous, durable and with a desirable drape, the *patolu* of Gujarat could not be unworthy of addition to the wardrobe of a bride and beauty of any country. The figured body, the striped border, and the gold *palav* with *nakshidar* designs on either side of gold band give the fabric both a pleasing and brilliant look. The merging of one shade into another or extensions of darker shades in regions of lighter shades recalls to one's mind the brush work on canvas and the nature's work on the wings of a butterfly.

The love of Gujarati brides for this garment, a product of indigenous art, is indeed worth emulating not merely copying. It is a pity that this fabric which deserves a place of pride as a champion among art, an emblem of skill and a symbol of age from which it descends to the present era has to seek patronage from patriots and art lovers for its sustenance. During the last war all exports in *patolas* stopped, and now after the war, the prices are soaring so high that the average user finds its purchase beyond his purse.

The *patolu* technique is seen extended to fabrics for other uses now. Hangings, table covers, blouse pieces, borders and handkerchiefs are some of the new introductions. The designs commonly met with in *patolas* are described hereafter.

The Patolu Designs

Watt[1] differentiates between the *patolas* manufactured at Cambay, Pattan, and Surat in the following words.

"In the Cambay pattern, a diaper is produced by a white line that forms meshes flattened laterally (*i. e.* their greatest length vertical). Produced within these are three white flowers borne on dark green stems in a maroon field, but the sprays lie as it were sideways to the lengths of the *sari*. The border stripes are not uniform, the end ones being broader and the pattern of these running vertically, whereas the side stripes are narrow and the pattern drawn out lengthwise much as in Penjdeh rugs".

"In the Pattan form there is no diaper, the pattern is laid sideways (*i. e.* facing the sides, not the ends of the *sari*), and the border stripes are carried within the field and portray a series of elephants, flowering shrubs, human figures and birds repeated in that sequence and so placed that the feet are inwards or towards the centre of the *sari*, not outwards as is customary with border patterns. The field colour in the Pattan *sari* is dark blue-green with the patterns in red, white and yellow".

"In Surat the background of the border is usually green, while that of the field is dark red. (Illustrated in *Indian Art Journal* Vol. I, No. 15, 1886, by Sir Thomas Wardle)".

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[1] G. Watt 1903, *Indian Art at Delhi*, Govt. of India Publication.

Mr. G. U. Patel[1] describes the following eight designs which are manufactured at Pattan.

1. *Nari–Kunjar bhat* or dancing girl and elephant design. It has necessarily a parrot included in it. Plate 1 b.
2. *Pan bhat* or leaf design. It is said to be the leaf of the sacred *pipal* tree (*Ficus Religiosa*). Plate 1 b.
3. *Rattan chowk bhat* or the cross of diamonds design. It has interspersed diamonds also. Plate 2 b.
4. *Okhar bhat* or water crest design. The real name of this design on investigation at Pattan appears to be *akhrot bhat*, *i. e.*, walnut design.
5. *Phulvadi bhat* or floral design is generally enclosed in diapers outlined by a single line. Each diaper contains three flowers. Plate 6 b.
6. *Wagh–Kunjar bhat* or tiger–elephant design. The animals alternate with each other in the design. Plate 14, a & b.,
7. *Chhabri bhat* or basket design. Here each enclosure containing an elephant is made up of four quadrants which look as if forming a basket when two of them are taken together. Plate 14 b.
8. *Chowkhadi bhat* or a diaper with a double outline design. Each diaper includes three flowers borne on a stem. Plate 14 a.

To these designs may be added another design seen at Pattan. This is the *Ras bhat* or dance design, a design comparatively of recent introduction (Plate 14a). One may come across some mixed and geometrical designs too (Plate 4 a & b).

In this connection it may be further pointed out that inquiries made at Pattan show that the classification of *patolas* on the basis of the place of origin as described by Watt is rather artificial. It is almost certain that *patola*–weavers from Pattan migrated to Cambay, Ahmedabad, Surat and other places and thus carried the original designs from Pattan itself.

Two other designs in *patolas* may also be mentioned. One from Orissa on an *odhani* (Plate 5 b), head cover, has already been mentioned earlier in the paper. Here the figures are not formed by the usual lines in steps made of small squares. It may be pointed out that this design may be older than those in which the figures are outlined by squares. The latter is a shorter cut in the long job of tie–dyeing. The squares actually reduce the number of variables in and increase the number of threads in each group which is tied and dyed similarly. This design is illustrated in Plate 1, and Plate 5 b.

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[1] G. U. Patel, 1949, 'Pattan no Patolo', *Nabhovani* or Radio Listener, dated 16. 4. 1949, Baroda.

The second design is not actually done on a *sari*. It appears to be a male garment *i. e. dhoti*; at any rate, it is not a wedding *sari*. The design here consists of *devnagari* alphabets (Plate 5 a). It is pointed out that this type of fabric is used by the Vaisnavas, Shivaites, and Jains alike, and the characters woven on the mactually form *mantras* or prayer verses of the religious sects mentioned above.

Technique of Patolu Manufacture as Described in Literature

The oldest description available is by Wardle[1], 1886, which runs as below:—

"It is woven with warp and weft which have been separately tied and dyed by the bandhana process. The dyer takes a small bundle of warp which has been dyed by the lightest colour found on the warp of the finished piece, and draws in pencil upon it some lines at measured distances according to the design to be produced. His wife then ties the silk along the spaces marked, tightly round with cotton thread, through which the dye will not penetrate. It is then dyed with the next darker colour found upon the warp, and the process is repeated until the darkest colour is reached. The weft is then treated in the same way in order that in the loom, when it crosses the warp each of its colours may exactly come in contact with the same warp. The little bundles of warp have next to be arranged in the loom by the weaver, who takes the little bundle of weft one at a time using each in its own place throughout the design. The patola is a speciality of a province which includes the territory of H. H. The Geakwar of Baroda, H. H. The Nawab of Cambay and the the silk weaving districts of Ahmedabad, Surat and Cambay".

Watt[2] repeats the above description and states that it is adopted from Mr. A. B. Gupte. He further adds, "The light coloured portions are usually pure white, passing into yellow, the ground is maroon with darkest patches in black green......... From the design being produced by bunches of warp and weft, tie–dyed at fixed points, it is elaborated in squares and with step by step outline, like the embroidery on the meshes of net or gauze that was prevalent in mediaeval times and which still lives with peasantry of Europe".

Adalja[3] describes the technique in Gujarati at some length. The following is an abridged translation of the text.

Weaving is done on a simple loom.

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[1] Sir Thomas Wardle, *The Jl. Indian Art & Industry*, Vol. 1, No. 15, p. 120, 1886.

[2] George Watt, Indian Art at Delhi, p. 257.

[3] *The Commerce and Industries Department* Bull. No. 24, 1948 of Baroda State, Baroda.

Warp and Weft: Rough and stiff yellow or white silk is steamed for a long time with a view to softening it before it is spun or thrown. Three or four yarns are spun together as in doubling by women on a big spiuning wheel. The warp is spread on a rectangular frame, and sectioned by grouping the threads in their correct place. Weft is also prepared similarly using a hank of fifty yarns which are placed on two nails fixed on either end of a small rectangular frame. This is also grouped in sections which are to be dyed together. Warp and weft so prepared go to the person who ties them to occlude such portions of yarn as are not to receive the first shade. This person is known as the *pattibandha.*

The work of the Pattibandha: Red colour is imparted first after tying the hank all over except in regions which require the red shade. According to the rule of the design, the warp is marked with charcoal so as to indicate the regions, intended for different shades. Charcoal is chosen for this purpose because it is easily removable at the time of dyeing.

Dyeing by salvis: The warp and weft thus tied are taken away by the *salvi* or weaver, who himself dyes it in red colour, removes the excess colour by washing and boiling, fixes the shade by steaming the hanks, and washes it in well water. The colours used are not indigenous and are available in small tins.

Co-operation between the pattibandha and the salvi: Before the next shade *i. e.* yellow is imparted, old knots in the regions to be dyed yellow and green are untied by the *pattibandha*, the regions dyed red are tied up and the hanks are returned to the weaver to repeat the dyeing process with yellow colour. The hanks are again sent to the *pattibandha* who now exposes the regions to be dyed blue, black and green, and covers the rest of the hank before the application of the blue colour to the hank. Green shade is developed by the combination of yellow and blue, while black is obtained by the combination of red and blue. When all knots are removed, white, red, yellow, green, blue and black shades are found on the thread on predetermined lengths. As the hanks travel to and fro between the *pattibandha* and the *salvi*, there has to be a close co-operation between them.

Simple Instruments: The *salvi* who is both a dyer and a weaver uses very simple and primitive instruments. For bobbins he has hollow reeds. His shuttle is shaped from a bamboo piece with one end closed by a joint. The weft bobbin is fixed in the shuttle with the help of an old rag on a spindle. Only one heald is used and it is levered on the roof. Only half the warp threads are drawn in and remaining half are left free. The *patola* loom is a simple and straight forward device. Except its square frame, all other parts are made of bamboo or wooden strips.

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Process: After spreading and drafting of the warp, each thread is examined and the colours are arranged in the order of design, is examined for any inaccuracies which may have crept in, in which case the particular threads are reoriented with the help of a needle. In short, similar colours of warp and weft are juxtaposed so as to obtain the correct design. Hardly 9 or 10 inches of cloth is woven in a day by two persons working together. A *patolu* takes 15 to 20 days for weaving.

The following references[1–3] also contain brief description of the *patolu* technique, but there is nothing new in them apart from what has been described in the preeeding pages.

Leix[4] also describes the technique of *patola* manufacture:

"The process is as follows: First of all the warp threads are dyed in the lightest colour to be contained in pattern, then those portions of the pattern which are to be of the next darker shade are traced on a bundle of the threads. The part of the threads within the pattern is then tied up by one of the women of the family and bundles are dyed by the dyer. The process is continued with the threads which are to bear the next shades of the pattern, and so it goes on untill the deepest dyes have been applied. After this preliminary treatment, the weaver weaves the weft into the warp, a task performed with the help of an extremely primitive loom. In every stage of the process, both in dying and weaving, great care and precision are required if the pattern is to be perfectly clearly defined".

"The technique is known to ethnologists as 'ikat'. In this case where both warp and weft are dyed according to the pattern, the technique is called "double ikat". The word ikat is of Malayan origin, and like the Indian word *bandhana* it describes the characteristic part of the work, the tying or wrapping up of the threads to prevent penetration of the dye".

Bühler[5] describes the Indonesian technique of the manufacture of double ikats as below:–

"Pattering the warp is done in the following manner:–

The threads are probably stretched on the frame which is also used at a later stage for the application of the resists. As a cloth in the Basle Museum of

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1. G. V., Patola or silk fabrics from Surat, *Rupam* Nos. 35 & 36. July-October 1928, p. 65–66. with 5 plates.
2. A. Ghosh. The patola. *Marg.* Vol. II, No. I, p. 94.
3. G. U. Patel, Pattan na Patola, *Nabho Vani* (Baroda), *Radio Listener* 16th to 30th April 1949.
4. Leix 1940, *Ciba Review* No. 36, p. 1307.
5. Buhler 1942, *Ciba Review* No. 44, pp. 1594 et seq.

Ethnology shows the thread is warped on to the frame in seven parts of equal breadth. In each part, the thread secured at the place marked *a* marked in the diagram (plate 7) is passed back and forward twenty times. This repeated ten times, thus producing ten strips of twenty coils each, which are separatcd from each other by the last strips *c* and *d*. Simultaneously the threads are crossed between *d* and *e* probably with the help of cross strings. After warping has been completed, the crossings are marked by special knots *h*. In addition, each of the ten groups of threads is divided into four bundles (A–D), which are made up of components from each of the ten groups. In each of the seven parts into which the warp was originally divided ten strips with identical patterns are thus produced. The patterned thread is used in the making of fine cloths of the same patterns, in each of which two strips of the same section of the warp are contained.

"For the large check patterns often seen at the ends, and occasionally in the middle of the clothes, two adjacent bundles are taken together when the resists are being applied, and in this way the work is considerably simplified.

"The preparations for applying reserves to the weft have not so far been elucidated. It is to be assumed that they correspond to those described in connection with the warp, or that the method resembles the one followed in the manufacture of weft ikats in southern Bali.

"In order to assure that the figures of warp and weft correspond to form the pattern desired, a small bow the string of which is smeared with soot, is used to trace on warp and weft lines indicating the position of the figures of the corresponding system of threads This is done before the reserves are applied. Special patterns which might be followed in arranging the resists are as little known at Tenganon as they are in southren Bali. At most an old ikat is used to supplement the oral formulas by means of which knowledge of the pattern has been passed from one generation to another.

"The material used in making the reserves is palm–leaf bast. The parts which are to remain undyed are tied up first, immediately after them come those portions of the thread which are to be dyed red. Distinctive markings of the two reserves, like those common in Rote, have not been observed. After the first dyeing with indigo which takes place in the neighbouring village of Bugbug, the resists for red are removed, and the yarn is placed in the red bath.

"How the patterned warp is transferred to the loom, and the weft to the shuttle is not known in detail. It is only known with certainty that different sections of which the warp is made up, are discernible on the loom as the last strings are retained until weaving is finished. The actual weaving is a very lengthy

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process. The figures of warp and weft must fit each other exactly and this necessitates the laborious checking of every single thread.

"As warp and weft are given exactly the same patterns which blend into one in the fabric, the linen weave which is characteristic of double ikats of Tenganon does not impair the effect, as a linen weave would in the case of warp or weft ikats".

Reconstructed Technique of Patolu Manufacture

The following account of the technique of *patolu* manufacture is reconstructed from the foregoing description and notes collected in the course of investigations carried out at Pattan, the oldest and the biggest centre of *patolu* manufacture in North Gujarat. The process may be conveniently divided into the following five steps.

(a) Patterning and the involved calculations.
(b) Preparation of warp and weft.
(c) Tying and dyeing of warp and weft.
(d) Preparation of warp and weft for weaving.
(e) Weaving.

(a) *Patterning and the involved calculations:* It is interesting to point out that the *patolu* technique is very easily understood when it is reduced to a paper mat pattern. The calculations then become almost obvious. A reference to plate 3 a, b, and c will show that if a tie–dyed warp and weft is spread out separately, each of them will show the pattern noticeable in the finished *patolu.* The first essential step, therefore, is to tie–dye both warp and weft in conformity with the proposed design in the fabric. As tying and dyeing of individual threads is a very laborious task, the alternative step is to look for bilateral or quadrilateral symmetry in the design, because in that case pattern of dyed regions and in different shades will be similar on either side of the design warp–wise if the design is bilateral in that direction, weft–wise if it is in the other direction and in both directions if the design is quadrilaterally symmetrical.

Taking a concrete example of the leaf design indicated in Plate 3, if the strips of paper representing warp and weft are numbered, the sequential position of each can be established. As the design is bilaterally symmetrical warp way, it will be noticed that strips from the extreme and to the centre are similar to strips from the other end as one proceeds again to the centre. Thus strips 1 and 17, 2 and 16, 3 and 15, 4 and 14, 5 and 13, 6 and 12, 7 and 11 and 8 and 10 are similar in all respects, although each set is different from the other, and also from number 9 which is still different from the rest in the sequence and length of different shades along its length. There are thus nine types of strips warp-wise. Similarly, it will be seen that each strip is different weft-wise, and thus there are 18 types of strips in the weft.

Now if there are ten repeats of the design width-wise and 40 length-wise in the whole piece, then the nine types of warp strips will comprise 20 strips in each of the eight types and ten strips in the ninth. Similarly 40 repeats in the length of the cloth will entail 40 strips in each of the 18 types mentioned above. Each of these types have to be treated similarly in respect of tying and dyeing to obtain the necessary design.

Coming to the actual cloth instead of the paper mat, suppose there are ten threads equivalent to the width of each strip both warp and weft way, then the actual fabric with ten repea's of the design in question in the width will be covered by 1700 ends. Similarly for 40 repeats in the length there will be 7200 picks. These according to the calculations indicated for the paper mat will have to be grouped into nine sections in the case of warp, eight of which will have 200 threads in each, and the ninth will have 100 threads to make the total 1700. Each of the 18 sections in which the weft will be grouped, will similarly have 400 threads or lengths equivalent to the width of the cloth. Each of these sections has next to be tied and dyed according to the sequence and length of each of the numerous shades which go to form the design.

(b) *Preparation of warp and weft for tying and dyeing*

Unlike the normal practice, both warp and weft are spread out on different frames; and the design is marked out on both in a kind of outline to indicate the lengths which go under different shades in their correct sequence. How actually the weaver draws the design on warp and weft with charcoal or soot coated string is difficult to conceive. The drawings are quite often too difficult to be drawn free hand. There are further such minute details which make the process even more time consuming than the actual weaving. Possibly just one row of width-wise repeats is stencilled with soot or charcoal powder or even other coloured powders to indicate the lengths and sequence of each shade. These distances are then remembered and marked merely with black lines in both warp and weft. Enquiries made at Pattan reveal that the person entrusted with tying, *i. e.*, *pattibandha* generally knows by heart the distance under each shade for a known design and goes on with his work even without a pattern of the design in front of him. In India, unlike some parts of Indonesia, no distinction marks are maintained at the time of tying to indicate the regions intended for different shades. The details are just remembered and followed at the time of dyeing.

After the laid out warp is marked, it is sectioned according to the calculations shown above for grouping the ends which have to be dyed in the same sequenc of shades. To do so, the total ends are first grouped in respect of the repeats of the design, and then the subdivisions of each section are grouped together. Apart from the paper mat illustration and the figure illustrating the Indonesian way of sectioning (plate 7), the procedure followed is further illustrated in Plate 3. This figure first shows the ten main divisions of the ends corresponding to the ten repeats, and further nine subdivisions of each of only two of the ten repeats to avoid confusion.

(c) *Tying and Dyeing:* Tying begins after the sectioning of the warp and weft is over. Single shades are applied one after the other and mixed shades are developed by their combinations. Beginning with one of the colours which is usually red, different bundles of warp threads are reserved by tying with cotton thread except in the regions intended to be finally red and black. Regions meant to be yellow and green are exposed next and the regions already dyed are occluded. After the second application, the regions intended to be blue, green and black are only exposed. Application of blue dye achieves blue on white, green on yellow and black on red dyed portions. Portions meant to be white are the first to be tied and last to be untied. After the application of each colour, the shades obtained are made fast by washing, boiling, steaming and drying—both warp and weft threads are dyed together to obtain similar shades.

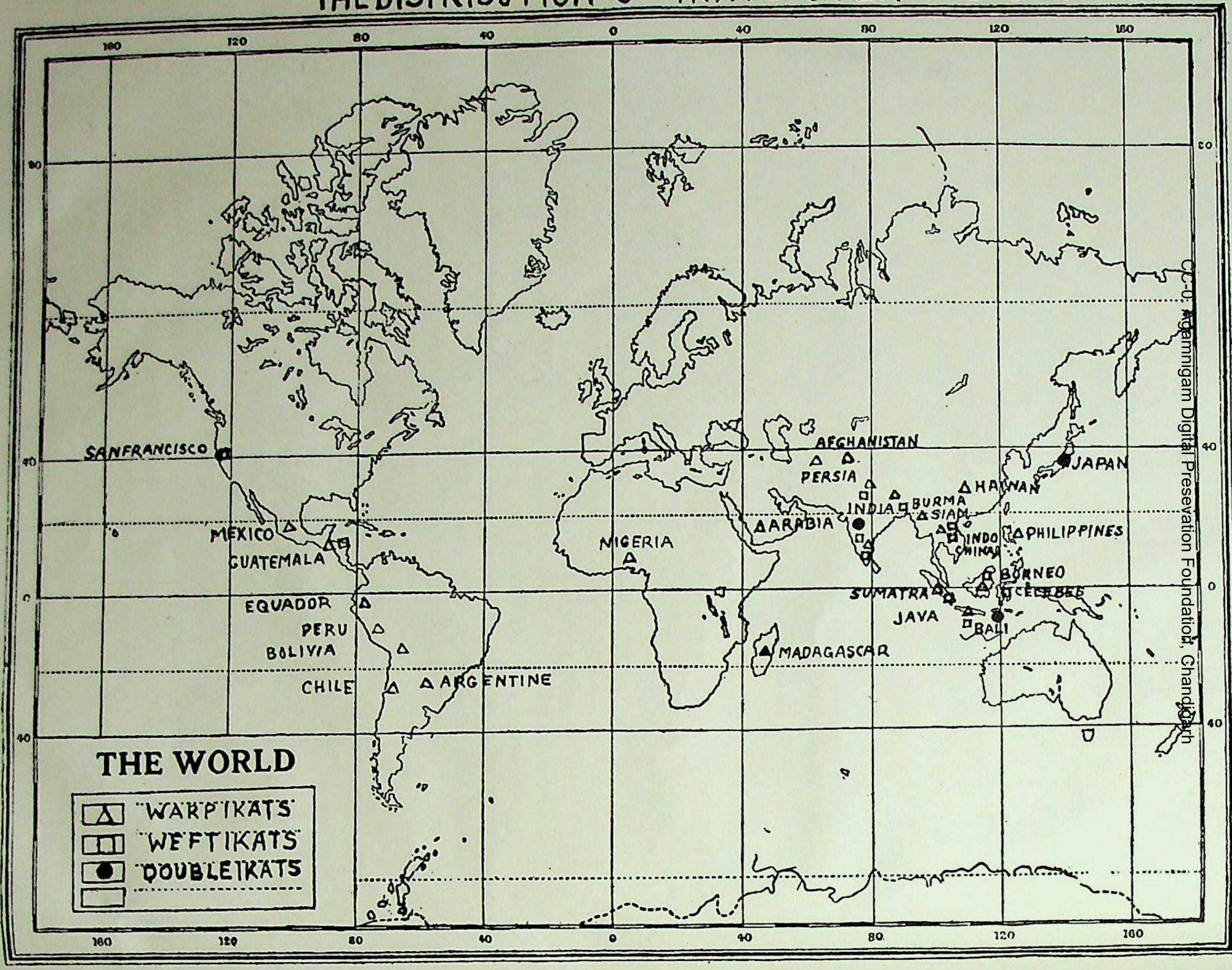
(d) *Re-spreading of warp and arrangement of weft:* Following the dyeing operations, the hanks of both warp and weft are untied and each section which was carefully picked from each repeat of the design, is meticulously brought back to its original place in the warp. After the threads are properly spread out, the design becomes obvious, and any faults in it caused by deranged threads are carefully removed. The weft hanks are then arranged in their proper sequence, wound on bobbins and numbered.

(e) *Weaving:* Weaving is then started. Counted number of weft are passed from each of the eighteen types mentioned earlier for the leaf design to complete one repeat. The design thus woven is checked and rechecked. Any changes indicated by the woven pattern are corrected and then weaving proceeds on slowly and steadily.

It is learnt that only nine to ten inches of cloth is woven per day and that it takes three to four weeks to complete a *patola* piece depending upon its length.

Actual photographs of the whole process as kindly supplied by Shri Keshavlal Laherchand Salvi, a *patola* weaver of Pattan, form plates 8 to 16 in the present text. Legends in Gujarati are given on each of these photographs while those in English are given under each of them in the following order:

THE DISTRIBUTION OF IKATS OVER THE GLOBE.


THE WORLD
WARP IKATS
WEFT IKATS
DOUBLE IKATS
SANFRANCISCO
MEXICO
GUATEMALA
EQUADOR
PERU
BOLIVIA
CHILE
ARGENTINE
NIGERIA
MADAGASCAR
ARABIA
PERSIA
AFGHANISTAN
INDIA
BURMA
SIAM
INDO CHINA
HAINAN
JAPAN
PHILIPPINES
BORNEO
CELEBES
SUMATRA
JAVA
BALI
160
120
80
40
0
40
80
120
160
80
40
0
40

संसार में इकट का फैलाव △ इकट का ताना □ इकट का बाना ● दोहरा इकट

Plate	8	a	Hanks of pure Indian silk yarn.
,,	,,	b	Boiling of silk yarn to soften and whiten it.
,,	9	a	Washing of silk yarn after boiling.
,,	,,	b	Opening of silk yarn.
,,	10	a	Opening of four silk yarns together on a simple device.
,,	,,	b	Folding four yarns together on a simple device.
,,	11	a	Spinning wheel for doubling silk yarn.
,,	,,	b	Laying of warp.
,,	12	a	Marking design on warp.
,,	,,	b	Marking design on weft.
,,	13	a	Dyeing of tied hanks.
,,	,,	b	Washing of dyed hanks.
,,	14	a	Separation of dyed weft types.
,,	,,	b	Winding of weft bobbins.
,,	15	a	Warp and weft spread out after dyeing in three colours.
,,	,,	b	Dyed weft showing the full design.
,,	16		Weaving of *patola* on a simple loom.

Incidence of Patolu and other ikats in India and abroad: The *patolu* is a speciality of Gujarat in India. In Gujarat there are only two centres where the craft is still practised namely Pattan and Cambay. It appears to have died out of Ahmedabad long ago, but it is difficult to date it. Even the Ahmedabad Gazetteer (1879) does not mention it. After Tavernier's travel in India in 1676, how long the craft was practised in Ahmedabad is indeterminable. From Surat this craft has died out within the living memory of the last decade. Double ikats in silk and cotton like the *patolu* are also known from Hyderabad (Deccan), Orissa and Benares. The word *patolu*, however, does not appear to be known either in Orissa or Benares. The Orissa design and technique are somewhat different. The characteristic step by step outline in curves seen in Gujarat *patola* is not noticeable there. It is interesting that among the animal figures camel is included in the Orissa double ikat along with elephant and birds, while none of the Gujarat *patolu* have this animal figured in them. Sambalpur[1] and Baripada (Dist. Mayurbhanj) are two manufacturing centres in Orissa. The weavers are Hindus of Delhi or Bengal. They use imported silk and indigenous dyes. This *odhani* is used for ceremonial purposes but is not necessarily a marriage garment.

Apart from the double ikats in silk, India makes in many centres warp and weft ikats also and both in cotton and silk. Such fabrics are recorded by Watson[2] (1873) from Tanjore, Kumbakonam, Ventapallum, Trichinopoly in the South,

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[1] Information about Orissa was kindly supplied by Shri K. C. Panigrahi, Curator, Provincial Museum, Bhubneshwar.

[2] Watson, (1886), *Textile Manufactures of the people of India and their costumes.*

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Katmandu (Nepal) in the North, and Sind in the West. They are also known from Benares, Hyderabad and Mysore. Bast fibre and wool ikats are, however, unknown in India. Bast fibres are not used even for tying as is done in Indonesia.

If the hypothesis that India is at least one of the original homes of ikats, is correct, it will not be without interest for the Indian reader to know the distribution of the technique in the whole world as summarised by Bühler[1] (1942) which follows hereafter. The distribution is also illustrated in the map.

Materials used	*Warp Ikat*	*Weft Ikat*	*Double Ikat.*
Bast Threads.	*Indonesia:* Borneo (eastern & south eastern Dyak countries), Babar, Tanimbar, Philippines (South Mindano), *Eastern Asia:* Hainan (?) *Africa:* Madagascar.		
Cotton.	*Indonesia:* Sumatra (Batak & Gajo countries, Lompong districts), West & Middle Java, Borneo (Malayan coast, Dyak country), Celebes (Toraja country, Minahassa), Sumbawa, Flores, Solor, Lomblem, Sumba, Savu, Rote, Dao, Timor, Semau, Kisar, Romang, Leti, Luang, Sermata, Damar, Babar, Tanimbar, Ceram (?), Philippines (North Luzon, South Mindanao).	*Indonesia:* Java (Grissee), Bali Lambok; Borneo (Malayan coastal districts), Celebes (Limboto–Gorontalo).	*Indonesia:* Bali (Tenganan).
	Arabia: Yemen.		
	British India: Bihar, Orissa United Provinces (?), Madras (?)	***British India:*** Bihar, Orissa, Bengal (?)	
	Further India: Burma, Northern Siam, Southern Siam.	***Siam:– Indochina:*** Laos tribes.	
	Hainan:		
	Japan:		*Japan:* Saitam, Nagoya
	Africa: Nigeria (Yola on the upper Benue), Lagos (Yoruba land).		
	America: Mexico (Chilapa, Oaxaca, Tenancingo), Gautemala, Ecuador, Bolivia (?), Peru, Chili, Argentine (Arauconians).	*America:* Guatemala (San Francisco el Alto, Escuintla)	

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1. Bühler, *Ciba Review* No. 44, 1942, p. 1608.

Materials used	*Warp Ikat*	*Weft Ikat*	*Double Ikat.*
Silk	*Indonesia:* Sumatra (Atjeh, Padang uplands (?), Benkulen (?), Bangka (Middle Celebes). *Turkey:* Brussa, Scutari. *Persia:* *Afghanistan:* *Turkestan:*	*Indonesia:* Sumatra (east coast), Padang uplands, Djambi and Indragiri (?), Palembang, South Padang, Pasemah country, Lematang Ulu), Riouw Archipelago, Bangka, Java (Grissee), Bali, Lambok, Borneo (Brunei (?), North Celebes (Limboto (?). South Celebes (Bugi) (?).	
	British India: Benares, Dekhan, Tanjore, Madras, Malabar coast.	*British India:* Benares, Dekhan (Nizams), Mysore Bangalore.	*British India:* Gujarat; Baroda, Cambay, Surat.
	Malayan Peninsula: Sitiawan, East Coast.	*Further India:* Burma (Southern Shan states), Northern Siam, Siam–Indo-china (Laos tribes), Southern Siam, Camboja, Malacca.	
	Japan: *America:* Mexico (Toliman–Queretaro, Sta. Maria del Rio, Southern Veracruz.		*Japan:* Oshima.
Wool	*America:* Chili, Argentine (Araucanians)		

Bühler further makes the following observations in respect of the distribution of the art:

(i) "Of all the ikat areas of the Old world, the most archaic is eastern Indonesia. This is sufficiently indicated by the material used which is knotted bast. Threads of knotted bast are used for warp ikats only, and these have been brought to great perfection in Eastern Indonesia. The gradual substitution of spun fibres for this primitive textile material is still in progress and can be observed in Central Borneo, as well as in the islands of Babar and Tanimbar. Further indication of the great age of warp ikats in the eastern part of Indonesia are provided by the primitive methods of preparing the threads for ikating, as well as by the extremely simple type of looms used there".

(ii) Although bast fibre ikats are made in Madagascar also, yet the art is traceable back to Indonesia.

(iii) "As far as Further India is concerned, the prevalence of warp ikats on cotton would appear to suggest that they are the oldest from of ikat-dyeing. In British India, however, silk ikats of all the three types are found, while cotton plays a less important part. It is interesting to note that in Further India, the pattern area both of warp ikats (Sitiawan and Malacca) and of weft ikats (in Camboja) is composed of separate sets, a peculiarity which has not been observed in the greater majority of the other ikat districts of Indonesia".

(iv) Weft ikats are known in Western parts of Indian Archipelago particularly in Sumatra (Palembang) and northern Celebes (Limbola-Gorontalo).

(v) An allied technique of patterning by pulling certain threads within a given area, is probably to be regarded as having been first practised in British India. The best known figures produced in this manner are the so called "arrow head patterns". Indian models are followed in Central Flores (Endeh) and the island of Rote.

(vi) "It is a remarkable fact that the ikat technique has hitherto not been proved to have been known in China, though the textile processing has always maintained a very high standard of development in that country. It is, however, quite possible that the craft was at one time practised in China. At any rate, it cannot be regarded as accidental that traces of ikating have been found in several places within the area of ancient silk-roads which linked China with the West. Fabrics of warp-ikat types, which is to be regarded as the most archaic, have been found in Turkey, Persia, and Afghanistan. The patterns which they bear are entirely different from those common in India".

(vii) "The ikat process found on the Japanese islands does not appear to have originated in China. It is probably based on Indonesian forms of the craft".

(viii) In Asia, it is assumed that the process developed independently in several places, the most likely are China, Further India, Indonesia, British India, and perhaps western Asia. There are pronounced differences in the modifications of the methods which if they did arise out of the same root must have developed independently for a long time.

(ix) Ikating in Africa—Sudan and Guinea coast is due to Islamic influence. Arabs appear to have taken it from India through trade relations in ancient times. Arabian ikats are of simple type, *i.e.* in the form of stripes, shot or patches of colour. They are warp–ikats.

(x) Ikats were known in Peru before the time of Columbus, and all the ikats found there are weft ikats. They are still made on the continent of America. The method followed there is similar to the Indonesian technique. Even the patterns are the same. On the strength of such similarity Bühler opines that the technique is derived from south–east–Asia. Slight differences in the technique suggest that there has been a long period of independent development.

(xi) Warp–ikats of Guatemala also show Indonesian influence. The weft--ikats executed there are in indigo on white ground forming crude figures.

(xii) It is, however, certain that warp–ikats are the oldest forms of ikated textiles, which were followed first by double ikats and then by weft–ikats.

(xiii) Weft–ikats of exquisite beauty are made in Bali and Lombok islands and in Palembang, Riouw or Bongka.

Buhler also notes the occurence of certain patterns in certain regions only.

(a) Polychrome warp–ikats are only peculiar to Madagascar and Borneo.

(b) Cotton ikats of Asia and Japan contain ikated stripes between strips of unpatterned fabric.

(c) Designs on cotton ikats of Peru and Mexico are executed in one colour only *i.e.* indigo on white.

(d) Arrow–head in narrow stripes is characteristic of India and Malacca. Narrow stripes are the only design known in most of the islands.

(e) Double ikats of Japan are machine made and have a very simple design.

As for the usage Bühler mentions that in Java they are used as curtains, as priestly vestments in Celebes and as shrouds by the Dyaks, Torajas, and to some extent by people of Sumatra, Central Flores and Timor. They are used as loin cloth shawls or *sorongs* in Indonesia.

These observations show that Indian patterns are copied in eastern Indonesia. In fact, Indian ikats are imported there even to this day from India and are also adopted by Arabs. The latter carried the art to Sudan and Guinea coast. Madagascar and some east American countries owe the introduction of this art to European sailors who took this art from India and Indonesia, while Mexico and Peru have an undeniable influence of Indonesian art, and so has Japan. Thus if the craft did not originate in China where weaving is supposed to have been invented, India is the most probable root centre. Migrations from India are recorded three centuries before Christ, and even later on Gujaratis including one of their kings Ajisaka[1]. It is noteworthy that silk weaving was a speciality of Gujarat despite the absence of raw silk in that country even to this day.

Technically speaking it appears more probable that weft–ikats are the oldest. This is also evidenced by its adoption in Mexico and Peru at some early date from Indonesian immigrants who on account of being cut off by difficulties of transport, have not progressed beyond the production of weft–ikats only till now. Most of the early ornamentation in textiles is generally of weft origin as one sees notably in ancient brocades. Warp–ikats may have followed and then double ikats seem to make a more natural sequence in evolution. However, as double ikats are always in plain weave, they may even be the oldest, and single ikats just its derivations.

It it noteworthy that ikats were more prevalent in India a couple of centuries ago than they are now as is indicated by their incidence from Nepal in the extreme north, Gujarat in the west, Orissa in the east, and Tanjore, Madura *etc.* in the extreme south. It is also a remarkable advance that Japan had mechanised ikating and was producing such ikats for Turkey before the last war[2].

The Place of Patolu in Woven Fabrics

The patolu is an ornamented fabric, but unlike other figured fabrics, is invariably woven in just plain weave without any alternation whatsoever or addition of extra warp or weft, as is done in the case of brocades produced by the use of Swivel shuttle or lappet needle. It needs no body or Jacquard looms. It is however, noteworthy that warp or weft ikats cannot be made in plain weave and therefore other weaves such as twill or satin have to be introduced in them to get the desired effect.

It is woven on paper mat basis from warp and weft each thread of which has several shades dyed on it on varying lengths such that when interlaced the shades of both warp and weft go to produce the desired figures. The patola is thus a feat of the dyer and weaver together rather than the weaver alone. Whereas one has to raise his hat to practical designer who conceived this method of weaving figures, the part played by the weaver, the dyer and the person tying the threads is no less praiseworthy. It has been pointed earlier in the paper that the art of sectioning the warp according to the number of repeats of the design, and then further subsectioning the ends in each repeat according to the similarity of sequence of shades and then regrouping them for similar treatment, is quite a difficult matter in actual practice. It is indeed a patient work to tie, dye, untie, re-tie, re-dye, and repeat it a few times both on warp and weft. It needs a keen eye and meticulous care to remember the sequence of threads in a pattern and adjust them accordingly when spreading a warp and in re-arranging the weft for correct sequence. It also demands a dexterity of no mean order to put each weft thread in its right place, all without a blue print, and just done with the rule of thumb.

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[1] Ajisaka – Communication from Prof. O. C. Gangoly.

[2] Buhler – cited above.

When art was judged by the yard stick of manual skill, a new way of achieving a thing, the amount of hard work done, and the patience involved, it was indeed a great piece of woven art. In those days it was difficult to compare the lightness, softness and suppleness, characteristics of a *patolu* and only obtainable in a single cloth, with that in any other texture. However, the merit that it acquired by the difficulties involved in processing it or the time consumed on it, is held no longer to its credit, notwithstanding the gorgeous effects that its numerous colours produce and the glamour that it imparts to its wearer.

The standard of assessing the value having changed, the buyer refuses to pay for the manual and mental dexterity of the weaver, much less for the time consumed on it on account of the slowness of the process. Further the introduction of more beautiful designs in fabrics from abroad at comparatively much cheaper price, has driven this beautiful art, well nigh to its end. Weavers of this fabric, though engaged on this craft for many a generation, are now taking to more lucrative trades. In fact they cannot help it and they have to do so just for sustenance. There is very little demand left and there is no outlet for export. Unrest in Indonesia following the war seems to have reduced the demand to nil from that country too. In India the only community which still persists in its demand for this fabric is the Bhatia community of Cutch and Kathiawar.

It is obvious that *patola* cannot stand the competition with foreign and local, machine printed or otherwise ornamented fabrics which are cheaper, modern, provide wide choice and are easily available. The fabric or rather this art is thus in a precarious position which can be saved either by patronisation accruing from patriotism or by modernisation of its technique to reduce its manufacturing cost. It has to transcend from the stage of family craft to a commercial art, and then into a scientific technique. The most essential step towards systematising the process is to prepare blue-prints for every stage of the technique and following it up in a rational manner. If Japan can run it on a power machine, why not India?

Printing the warp beam on both sides, and similarly the spreadout weft instead of tie-dyeing can certainly not only quicken the process, but also cheapen it enormously. Further, arrangement of weft bobbins in their sequence in a drop-box arrangement should make the weaving of a *patolu* feasible on a powerloom, not in single pieces but in hundreds one after the other. With a controlled tension on the

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thread, exact width of the cloth, and with the right sequence of weft bobbins accurately printed, there is no reason why *patolu* weaving cannot become an actuality on the power loom as much as a double printed cloth already is, in simulating a *patolu*.

The Cost and Commercial Aspects of the Patolu

Tavernier (1676), a French Traveller, in the account of his travels in India recorded that *patola* silks were available for Rupees 8 to 40.

Adalja (1924) tabulated the following prices:

	Patola variety	*Measurements*	*Cost*
1.	Nari-kunjar design	4½ yds. x 54″	Rs. 100/-
2.	Nari-kunjar design	5 yds. x 54″	115/-
3.	Pan design	4 yds. x 50″	80/-
4.	Pan design	5 yds. x 50″	100/-
5.	Rattan chowk	4 yds. x 50″	80/-
6.	Rattan chowk	5 yds. x 50″	100/-
7.	Akhrot design	4 yds. x 50″	80/-
8.	Chowkhadi design	4 yds.	75/-
9.	Chowkhadi design	5 yds.	90/-
10.	Vagh and bar hathi design	4 yds.	80/-
11.	Vagh and bar hathi design	5 yds.	95/-
12.	Chhabri design	4 yds.	80/-
13.	Chhabri design	5 yds.	95/-
14.	Dakshini Sari Potsada (Kinara Patola)	16 hath x 54″	100/-
15.	-do- (fully covered with design)	- Do -	150/-
16.	Patola sari	6 yds. x 54″	125/-
17.	Table cloth	1¼ yds.	20/-

He also stated that the labour of about three weeks involved in weaving a *patola* hardly brought a return of Rs. 15/- to 20/- per *sari* to two persons.

G. V. writing in *Rupam* (1928, Nos. 35-36, July-October pp. 65-66) noted that between two *patola* weavers, the income from a *patola sari* was Rs. 50/- and that the cost of silk, and dying process amounted to Rs. 150/- for a sari.

G. U. Patel (1949) compares the current rates with those prevailing in the pre-War times.

		Prewar rates.	*Rates in 1949.*
1.	Patola sari	Rs. 75/– Rs. 90/–	Rs. 618/– to Rs. 759/11
2.	Blouse piece	Rs. 20/–	Rs. 87/ 2/–
3.	Table cloth with chess design	—	Rs. 111/ 9/–
4.	*Rumal* 2′ x 2′	—	Rs. 47/13/–
5.	9 yds. sari border	—	Rs. 143/ 7/–

He further reports that against 8 saris sold in 1936, there were only 2 sold in 1946 and none was sold in 1947–48. Indian *patolas* had a big foreign market in France, America, Africa and Java before the War.

It is interesting to point out that there were only two families engaged at this craft at Pattan in 1949, while they ran into hundreds even in the beginning of the 20th century just as they did in the 11th century when the art appears to have begun. Statistics about tne population of *patola* weavers in Hyderabad, and Orissa are unfortunately not available. Shri Pannigrahi, Curator of the Orissa Provincial Museum, Bhuvaneshwar informs us that the weavers engaged at this technique are all Hindus, some of whom trace their origin to Delhi, while others to Bengal.

Conclusion.

This study may be concluded by stating that this relic of a grand fabric which has survived the test of nearly a thousand years, can still be made to live and thrive if modern methods of manufacture are employed and the old technique is modified accordingly. Surely the blue print of this fabric will not be as complex as that of some of the jacquard figures. The calculations involved in each design are not difficult. Grouping of warp though laborious is simple and alternative methods of double printing instead of dyeing are now available. Even the costly silk as raw material can be replaced by the cheaper art silk. If these changes are visualised in the proper perspective, a new *patolu* with all the grandeur of the old if not more, with newer designs and yet easier and cheaper to manufacture can take the place of the renowned *patolu* in which warp and weft were tied and dyed repeatedly and finally so laboriously interlaced on a primitive loom. "Old order changeth yielding place to new".

Summary.

The foregoing account of *patolu* is not only intended to collate the available information relating to its technique, but also to introduce this beautiful fabric, a product of Indian cottage-craft to the English reading world. It also aims at prolonging the life of the craft which is truly dying a slow and gradual death, not merely by appeals for patronisation, but by divulging the secrets involved in its manufacture and by suggestions leading to modernisation of the craft.

Incidentally tracing the word *patolu* to the word *patta* for silk it is found that the latter word does not occur in Vedic Sanskrit. Its earliest mention in Kautilya's *Arthasastra* (3rd century B. C.) as *China Patta* to distinguish it from *Kauseya* or Indian silk, suggests a non–sanskrit origin of the words. However, its occurence in all the Dravidian languages of the Peninsular India indicates that it may be of Dravidian origin alternatively. It is interesting to point out that the word *patta* for silk occurs in *Acharanja Sutra* and *Brahat Kalpa Sutra* Bhashya, but is differentiated from other silks in *Arthasastra* (300 B. C.) and *Susruta* (4th century A.D.) as one of the three words indicating silk, and that it is freely used in Sanskrit literature written in the 7th century and after. The earliest mention of the word *patolu* in a Sanskrit *Kosa* is found in *Vishwa Prakasa*, a work of the early 12th century, although the word *Patolika* has been traced to 4th century B. C. Historical legends prevailing in Gujarat indicate that the craft of *patolu* weaving was well known in Pattan even in the 11th century, though tie–dyeing to produce stripes on cloth is shown to be known even in the 7th century A.D. It appears that the association of the fabric with wedding is due not only to the presence of colours, but also to the method of tie–dyeing because yarn coloured by tie–dyed method in red, yellow and green colours is held sacred not only in the marriage rituals of the Hindus all over India, but also for worship and *raksha bandhan*. The use of tie–dyed yarn as a token of cloth in Hindu marriage ceremony appears to be an older practice than can be easily traced historically. The mere fact that it is known all over India, and is common to all sects, indicates its indisputable antiquity.

Despite the antiquity and sanctity of the *patolu*, it is interesting to note, that the known main designs on this fabric do not exceed half a score. It is rare to see an unorthodox design, possibly on account of the difficulties involved in translating a new design in the *patolu* texture. The technique of *patolu* weaving and of introducing a new design in it, is now fully described and cleary explained with the help of text figures to drive away once for all the air of mystery surrounding the craft. It is pointed out that Indian tie–dying is Indonesian *ikating* and that all kinds of ikats are known in India both in cotton and in silk such as warp ikats, weft ikats, and double ikats according as the warp or weft alone is tie–dyed or both are tie–dyed before actual weaving. The *patolu* of Gujarat is a double *ikat*.

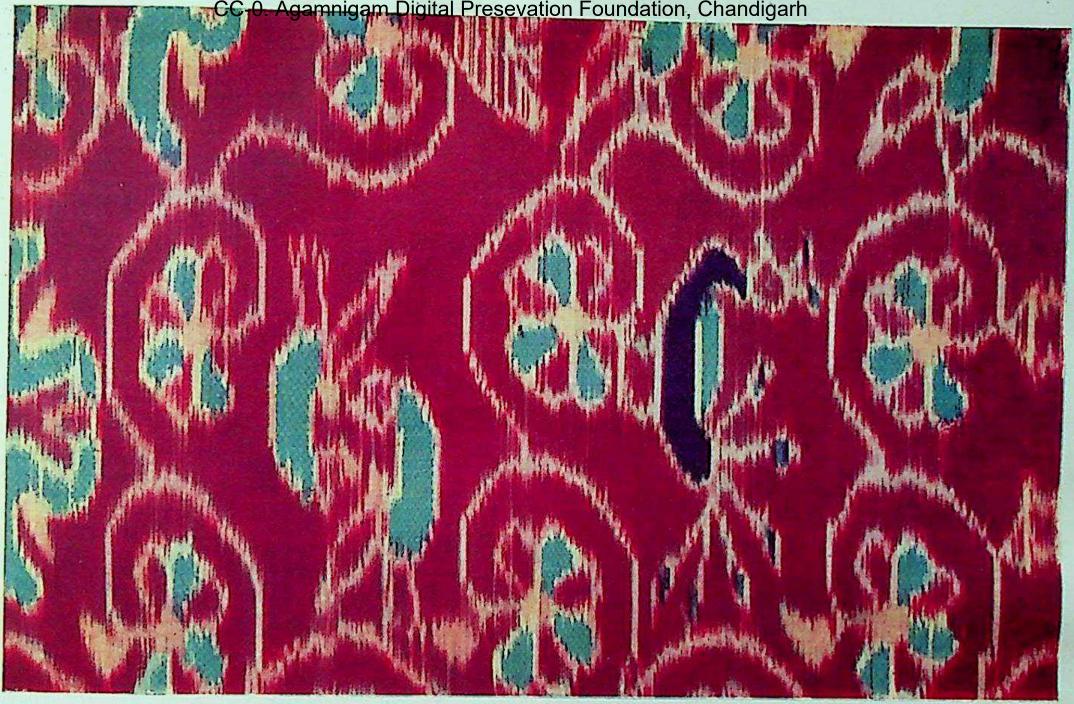
The incidence of double and single ikats of India is shown side by side with that in the rest of the world as described in literature. Judging by the methods of ornamentation of fabrics, it is probable that weft ikats are the oldest and weft ikats of Mexico which form an isolated offshoots of Indonesian art, support this contention.

However, as both warp and weft ikats cannot be woven in plain weave and it is only the double ikat or *patolu* which is essentially in plain weave, the most ancient of weaves, it is more probable than the former alternative that the double ikat is the oldest and that single ikats are just derivations of the art.

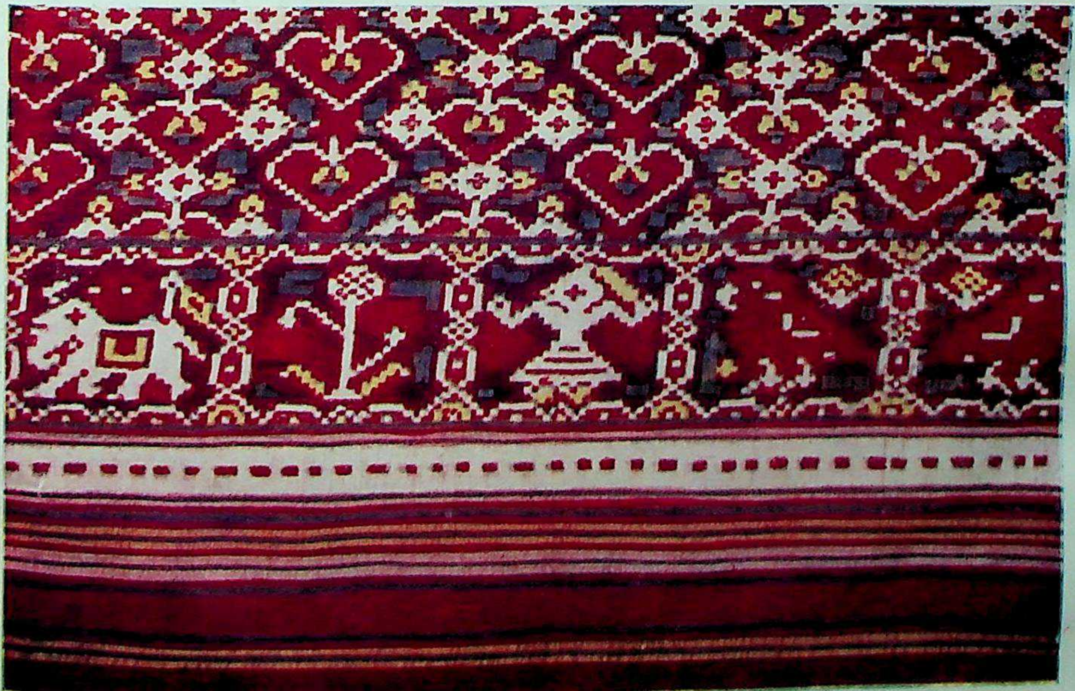
The commercial aspects of *patolu* manufacture such as the slow rate of production, high living index and high cost of raw materials which make this fabric too costly for any average purse are enumerated. The result is that the demand for the fabric is dwindling fast, and the persons engaged in this craft are taking to other more paying vocations. Finally, concrete suggestions are offered for mechanising the dyeing and weaving of *patolu* and for introduction of new designs for cheapening and popularising the fabric in order to keep the ancient art live somehow.

——oOo——

Plate I



(a) An Orissa odhni in actual colour.
उड़िसा की ओढ़नी असली रंग में ।



(b) A dancing 'girl-elephant' and leaf design patola.
नारी कुंजर और पान भांत का पटोला ।

Plate 2

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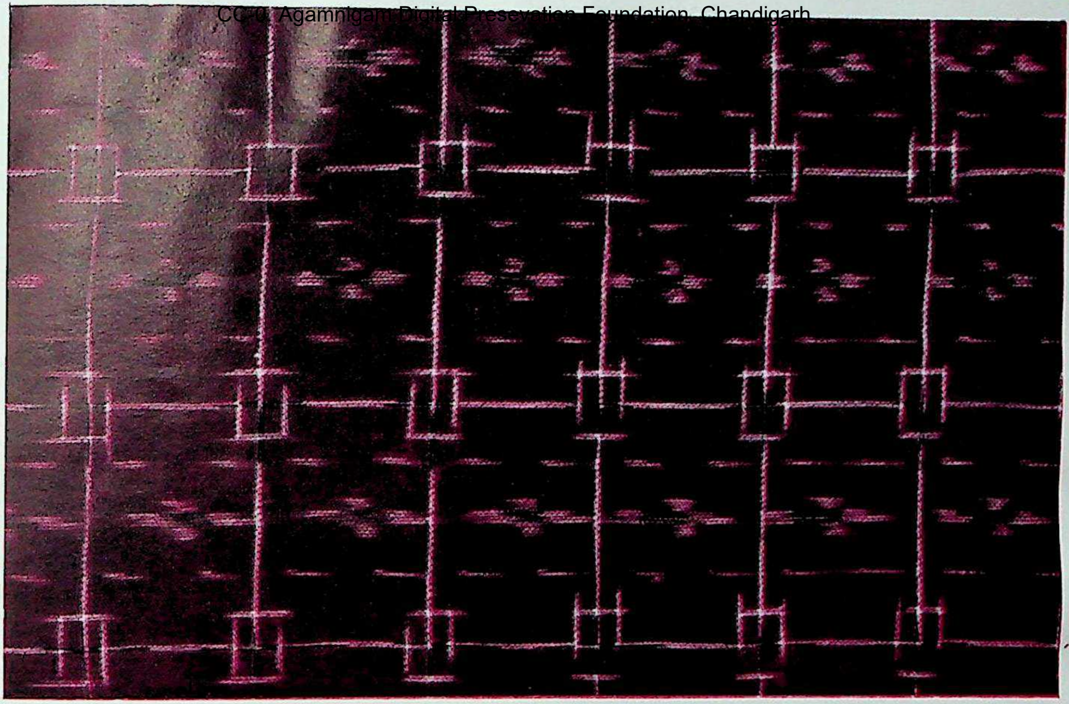
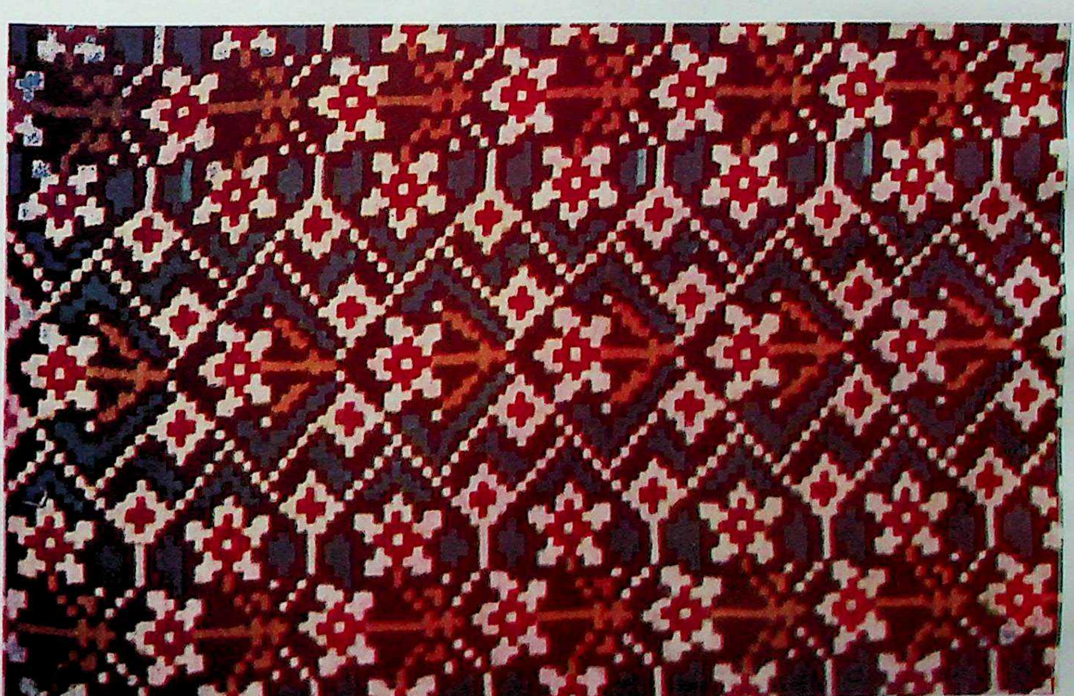
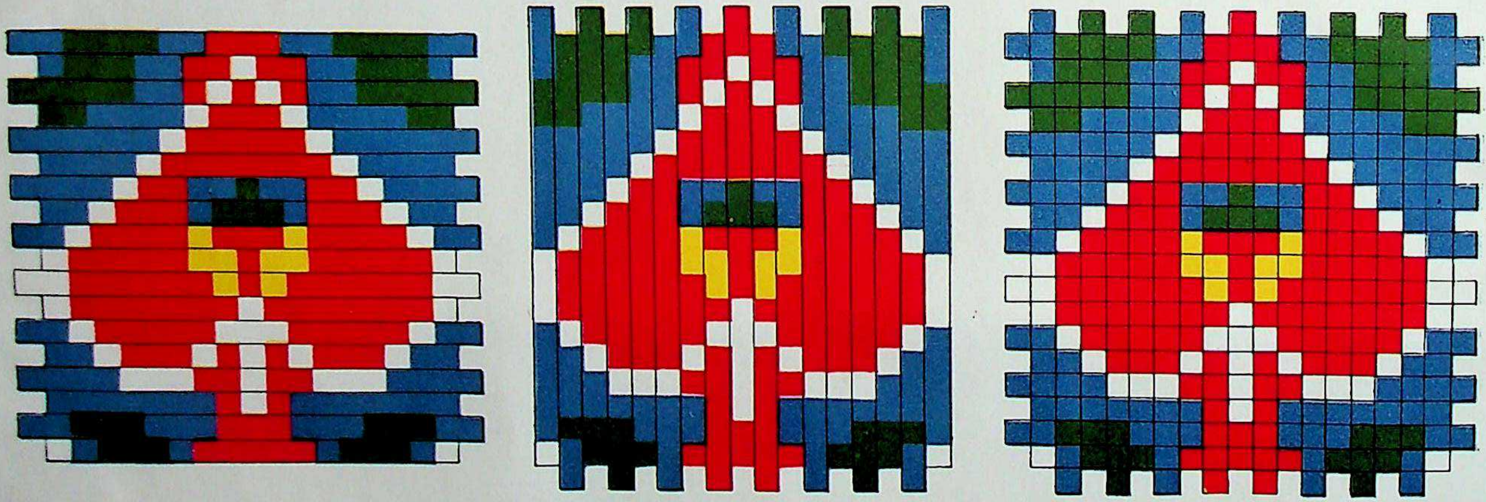


(a) A double ikat from Hyderabad (Deccan) in actual colour.
दोहरे इकट का हैद्राबादी पटोला असली रंग में।



(b) A cross or diamonds design patola.
रतन-चौक पटोला असली रंग में।

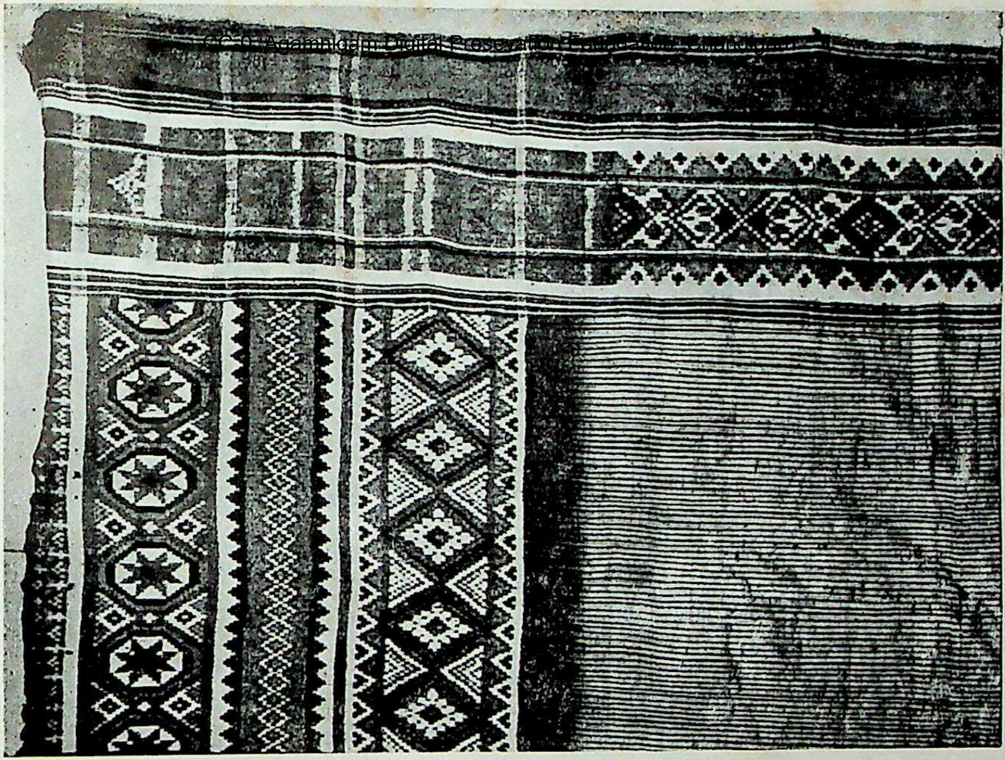
Plate 3



(a) (b) (c)

Leaf design as seen in spread out warp, weft, and woven state.

पान भांत, ताने बाने और बुनावट में ।



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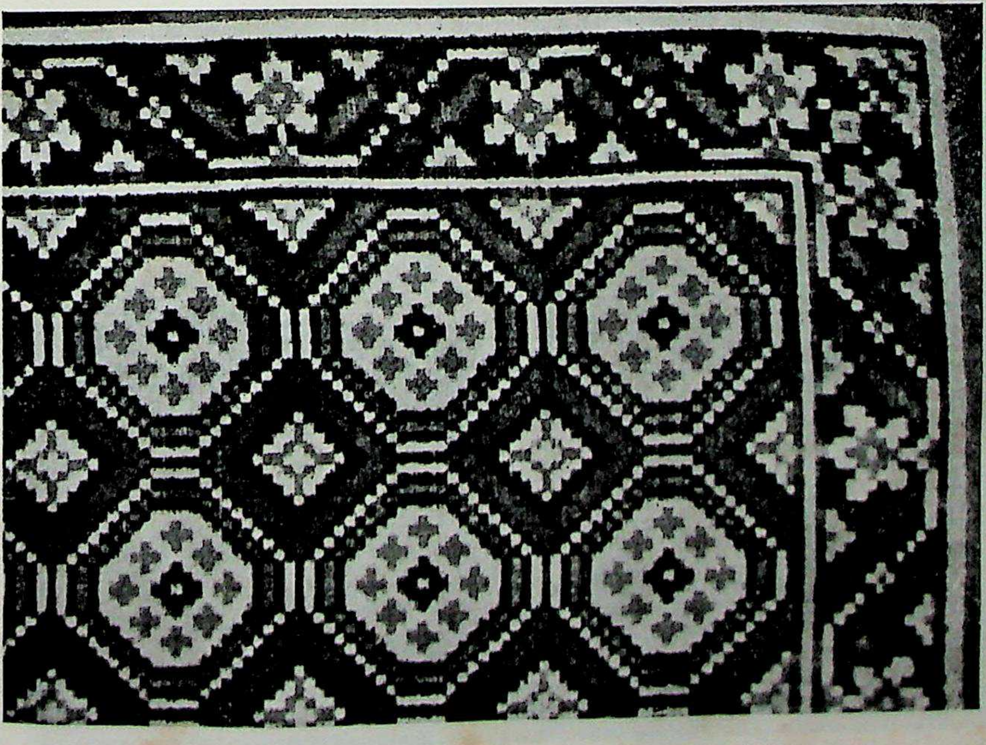
(a) A Dakshni *sari* in *patola* technique.

पटोले बिनावट की दक्खिनी साड़ी



(b) A Table cloth in *patola* technique. Geometrical designs.

पटोले बिनावट का मेजपोश, भूमितिक नकाशियां

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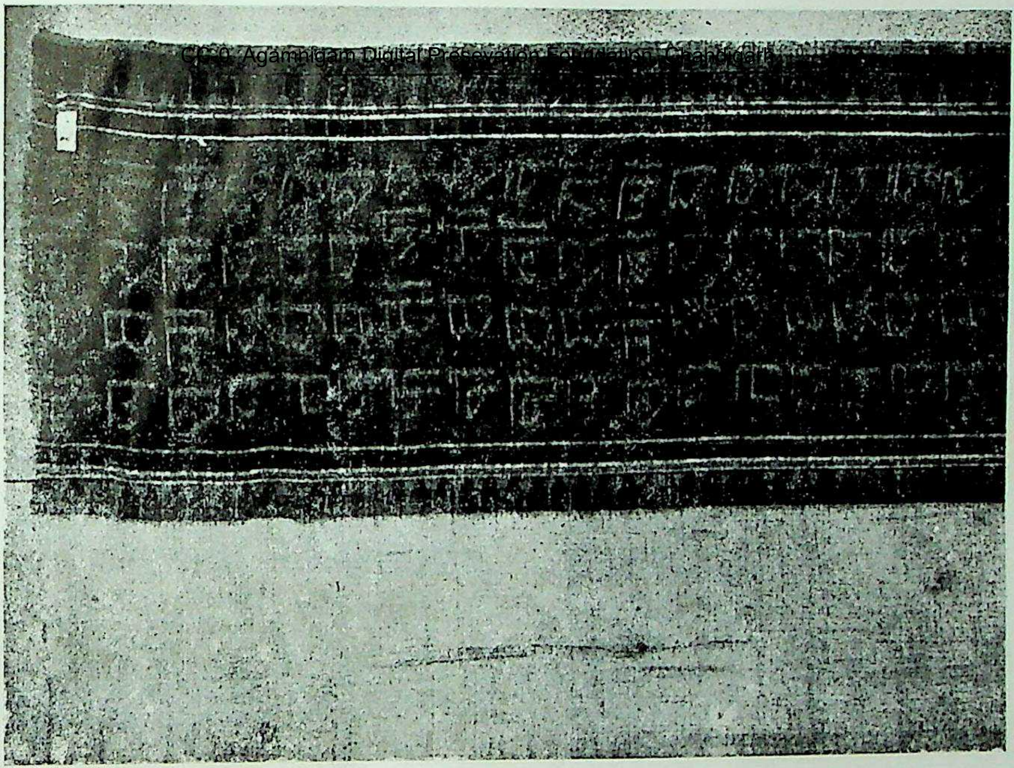
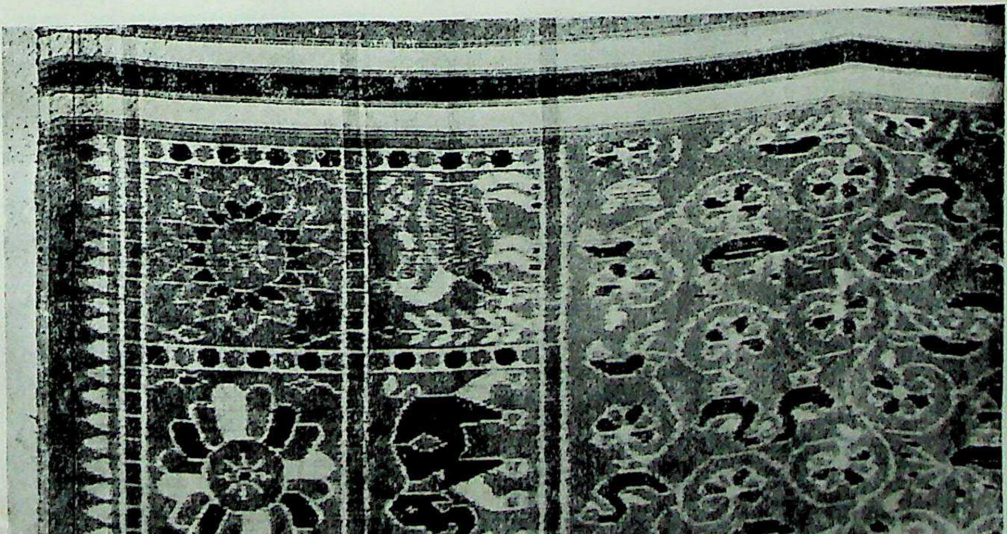
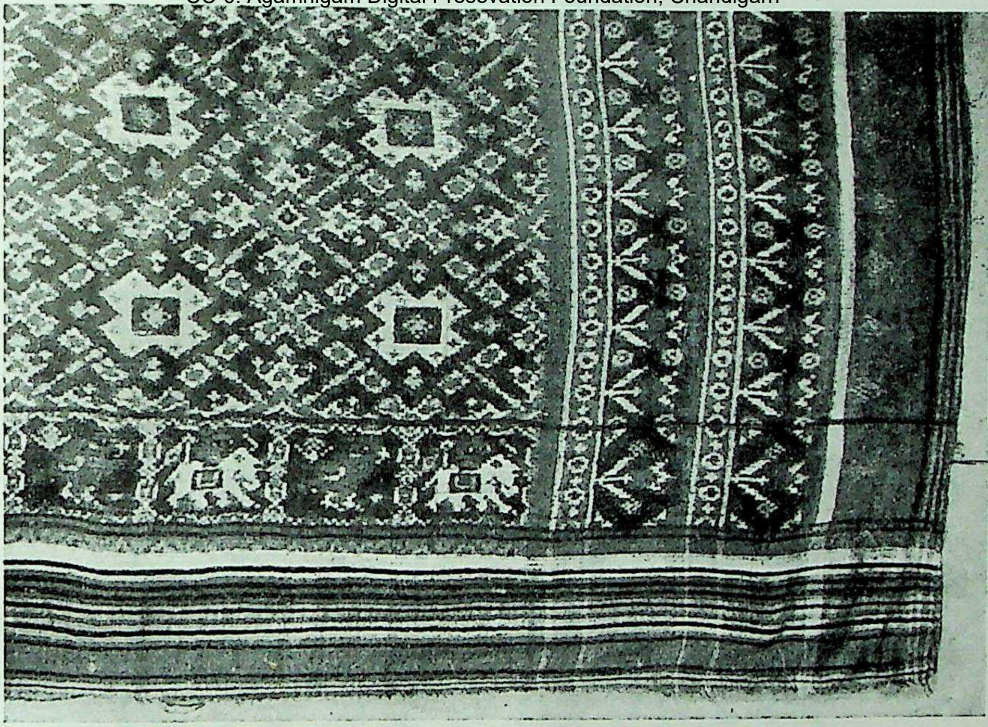


(a) Devnagari alphabet design in *patola* technique.
पटोले में देवनागरी अक्षिरों की बिनावट

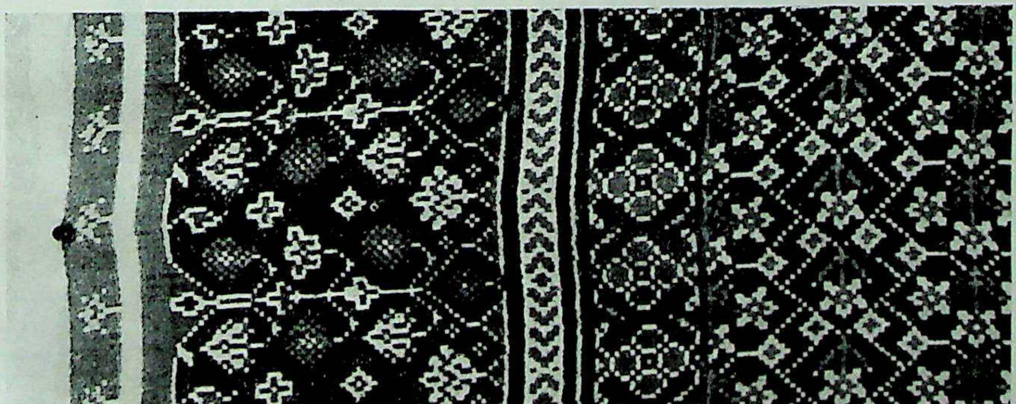


(b) An Orissa odhni in *patola* technique.
पटोले की बिनावट वाली ओड़िसा की ओढ़नी

Plate 6



(a) Ratanchowk Patola.
रतनचौक भांत का पटोला



(b) Phulwadi Patola.
फूलवाड़ी भांत का पटोला

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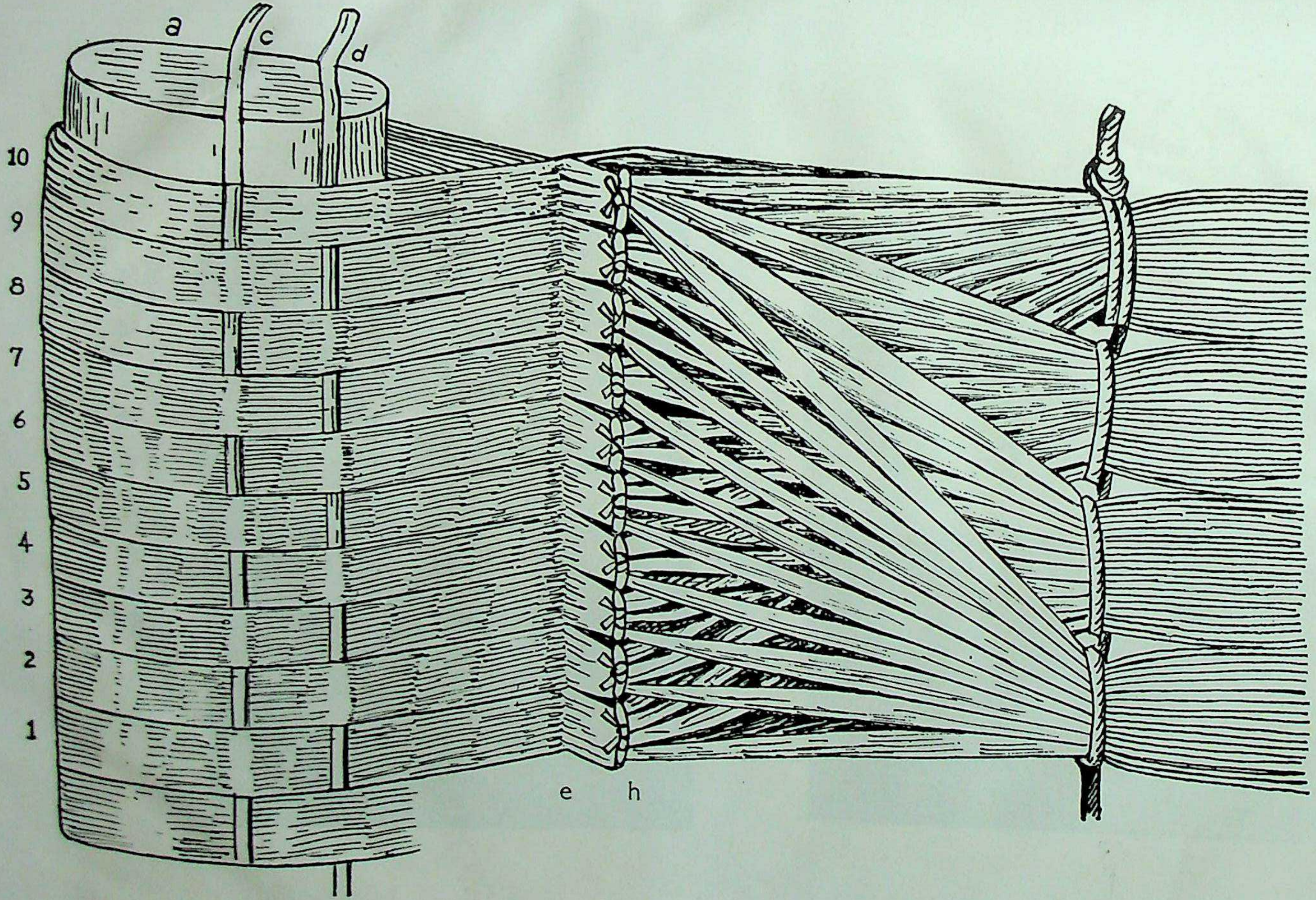
Plate 7


a
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Sectioning of ikat warp in Indonesia after Bühler.
बुहलर की तरह पर हिन्देशिया के इकट ताने की बांट

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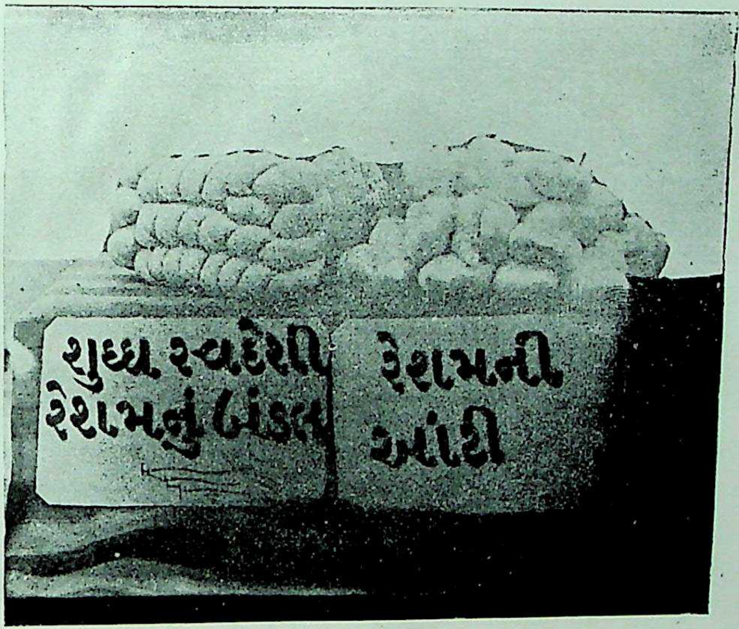
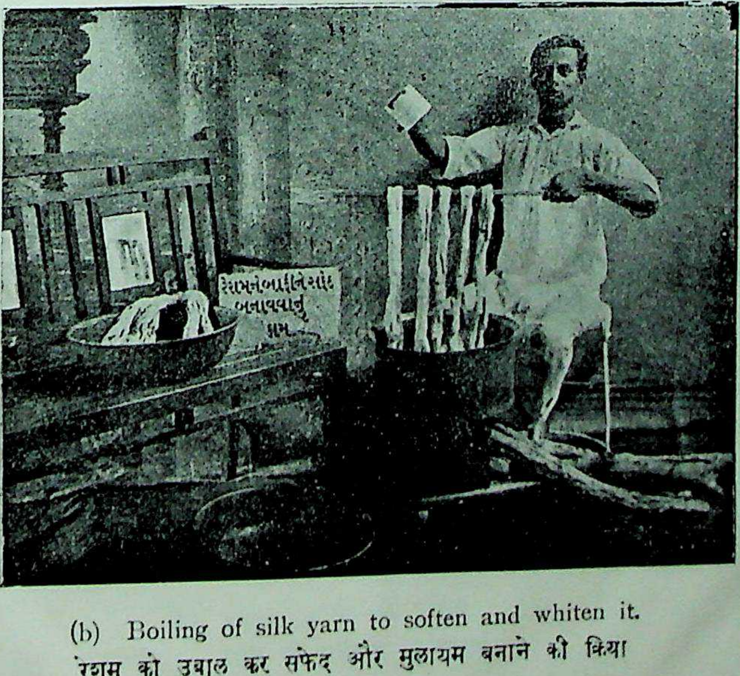
Plate 8

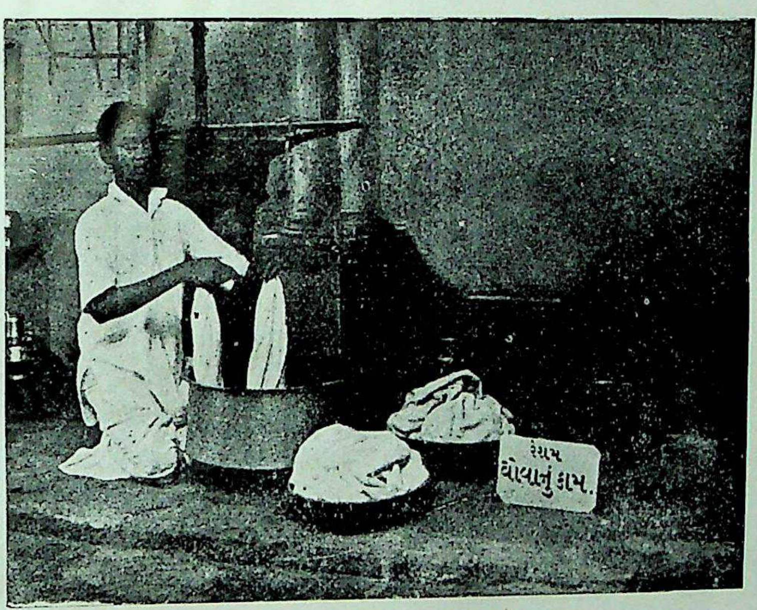

શુધ્ધ સ્વદેશી
રેશમનું બંડલ
રેશમની
આંટી

(a) Hanks of pure Indian silk.
असली हिन्दुस्तानी रेशम की आंटियां

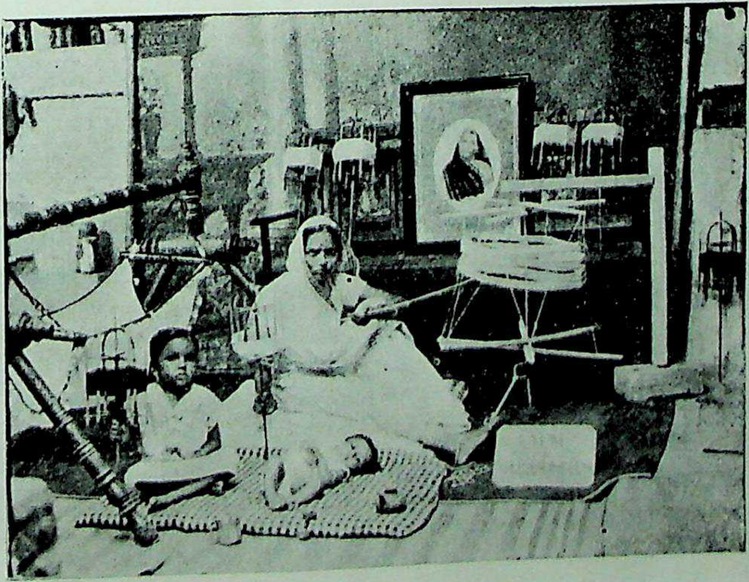

રેશમને બાફીને સફેદ
બનાવવાનું
કામ

(b) Boiling of silk yarn to soften and whiten it.
रेशम को उबाल कर सफेद और मुलायम बनाने की क्रिया

Plate 9

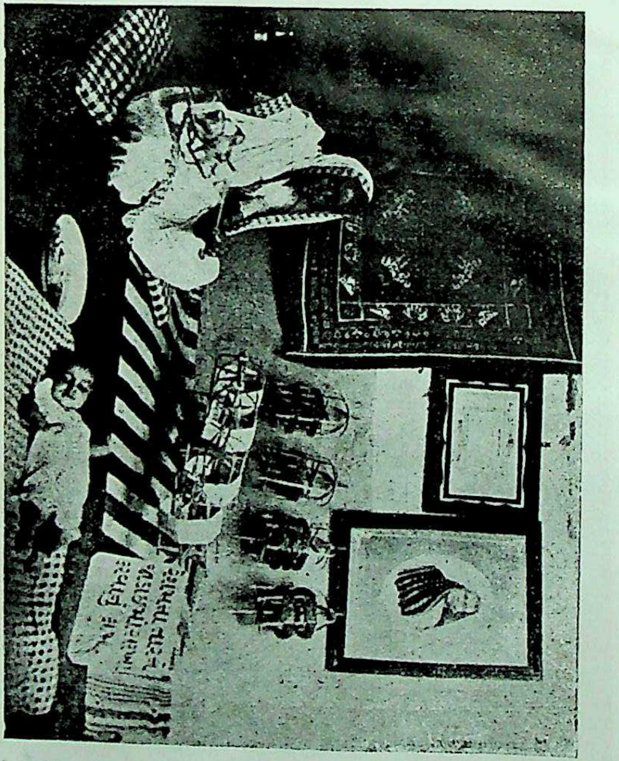


(a) Washing of silk yarn subsequent to boiling.
उबालने के बाद रेशम की आंटियों की धुलाई

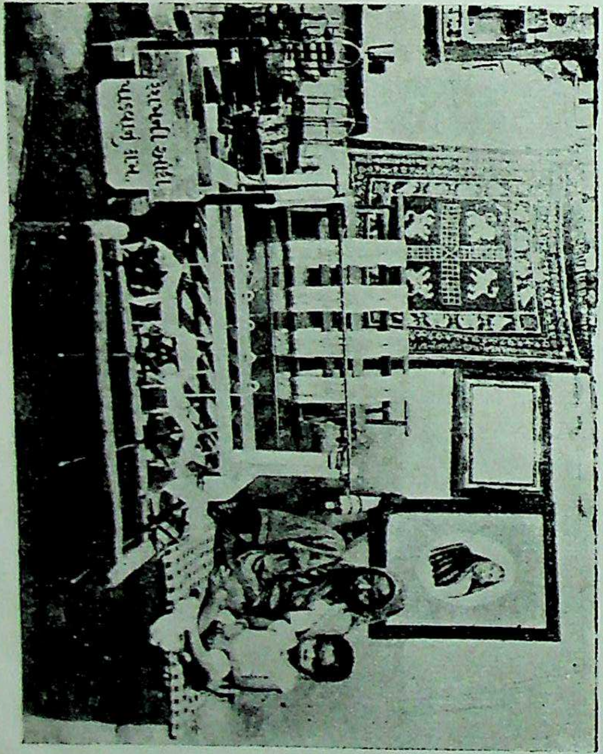


(b) Opening of silk hanks.
रेशम की आंटियों की खुलाई

Plate 10

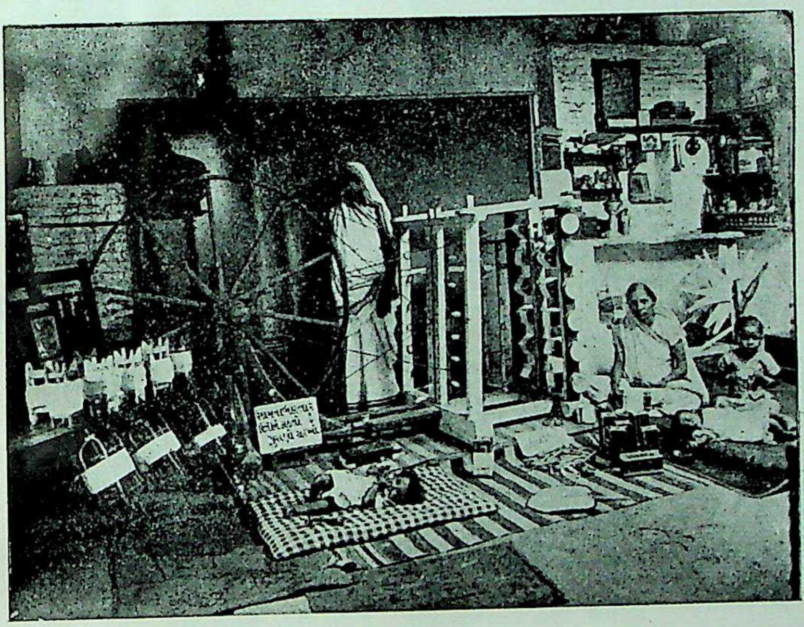


(a) Opening of silk hanks with the help of simple devices.
रेशम खोलने के परेते

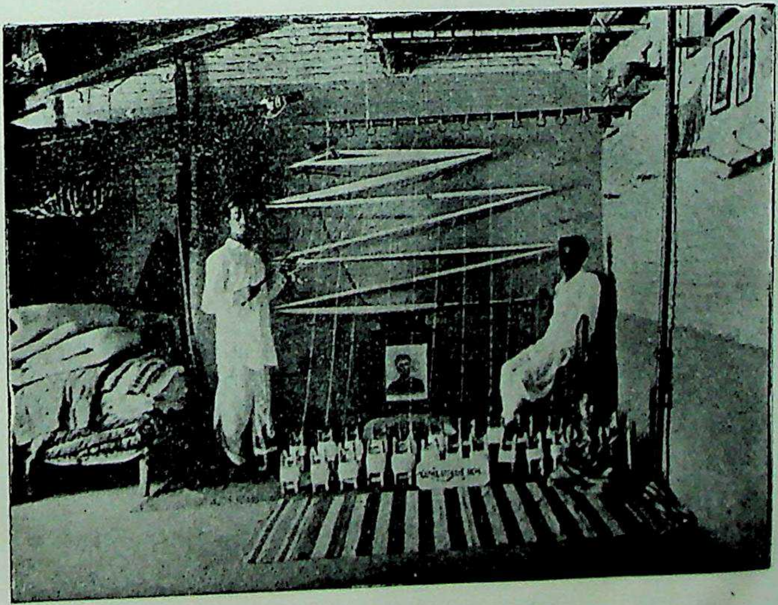


(b) Folding four yarns together on a simple device.
Note tiger-elephant-parrot patola in the background.
रेशम के धागे को चौहरा बनाने का यंत्र
बाघ कुंजर सुगा भांत का पटोला पृष्ठिकामें देखिए

Plate II

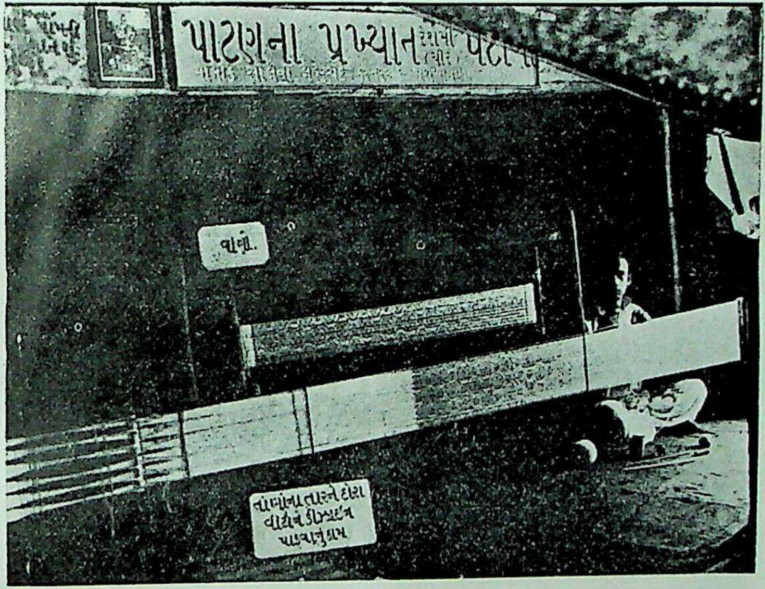


(a) A spinning wheel for doubling silk yarn.
रेशम के धागे को दोहरा करने का चर्खा

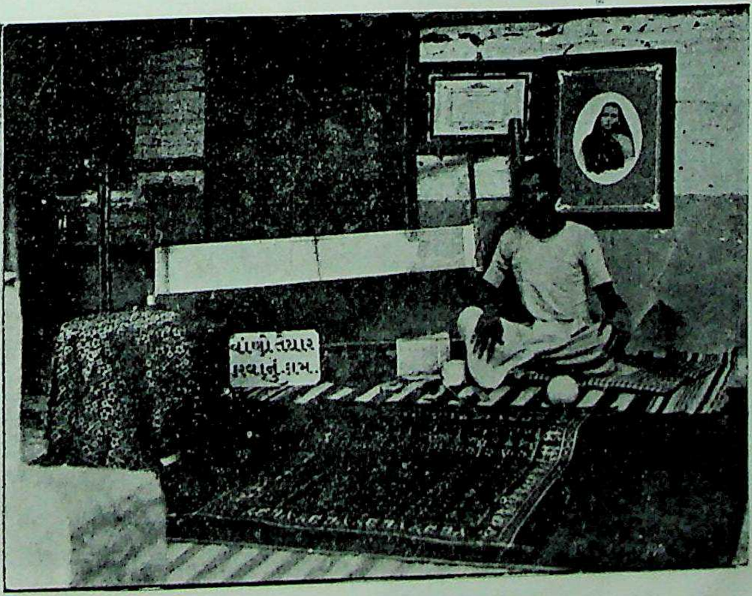


(b) Laying of warp.
ताना फैलाने की क्रिया

Plate 12

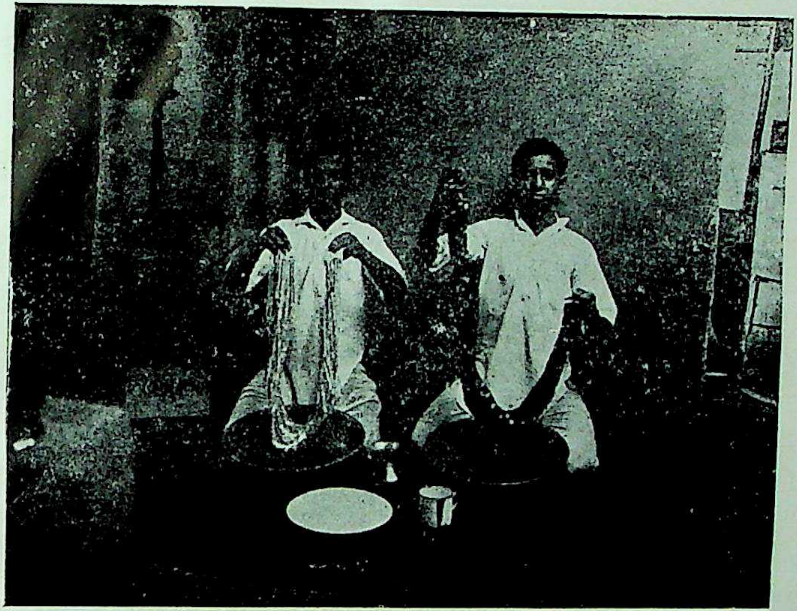


(a) Marking the design on spread out warp.
Note sectioning of warp on left.
फैले हुए ताने पर पटोले की नकाशियों के चित्र
बांई ओर ताने की बांट देखिए

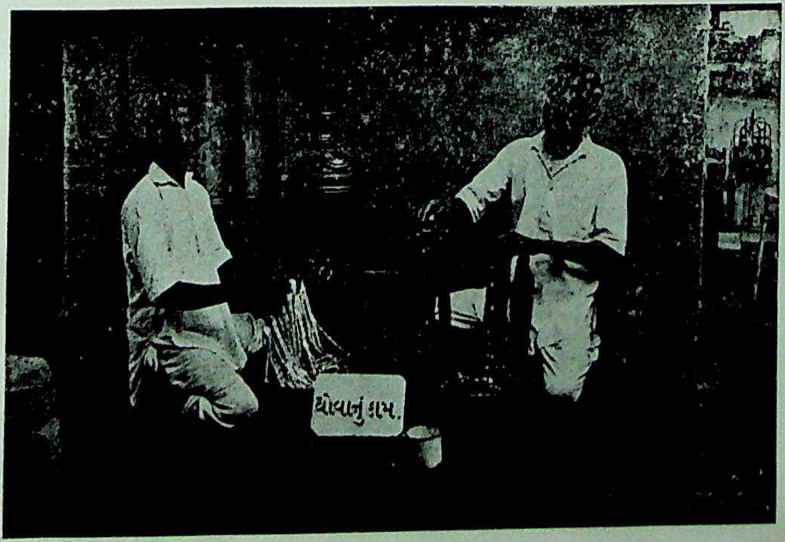

વાંણો તૈયાર
કરવાનું કામ.

(b) Marking the design on spread out weft.
फैले हुए बाने पर नकाशी बांधने की क्रिया

Plate 13

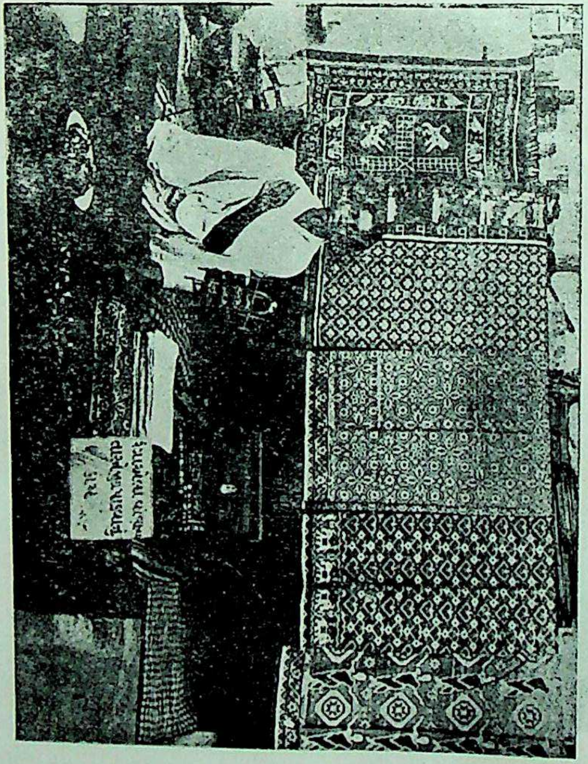


(a) Dyeing of tied hanks.
बंधी हुई आंटियों की रंगाई

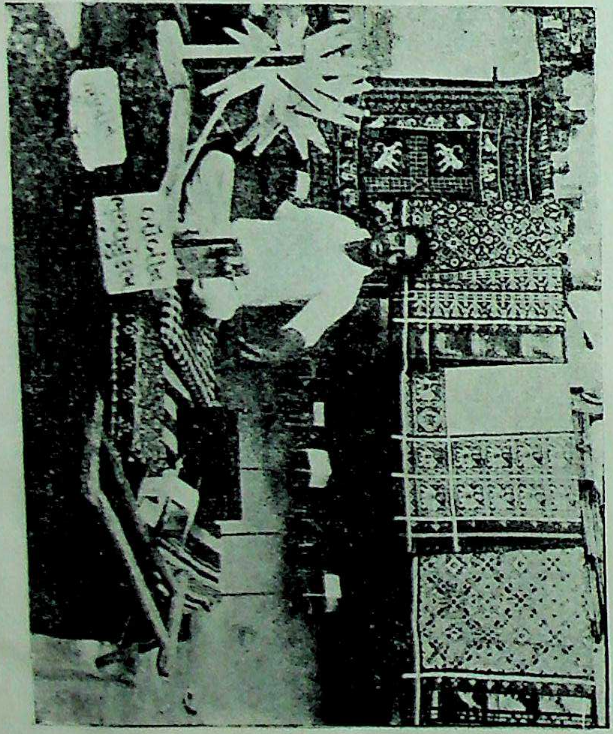


(b) Washing of dyed hanks.
रंगी हुई आंटियों की धुलाई

Plate 14

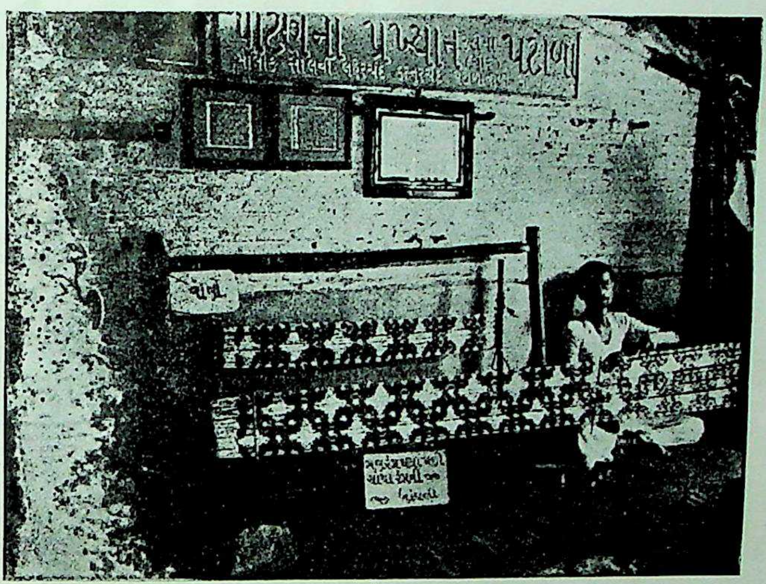


(a) Separating of differently dyed types of weft yarn.
बाने के असमान रंगे हुए धागों को अलग करने की क्रिया

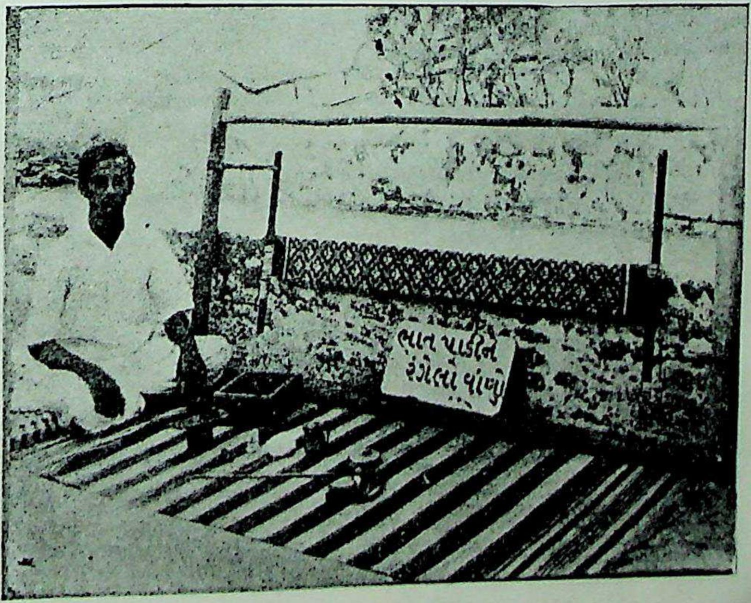


(b) Winding of weft bobbins. Note different designs of *patola* in the background.
बाने के धागों को गट्टी पर लपेटने की क्रिया
भिन्न भिन्न नकाशियों के पटोले दीवार पर देखिए

Plate 15

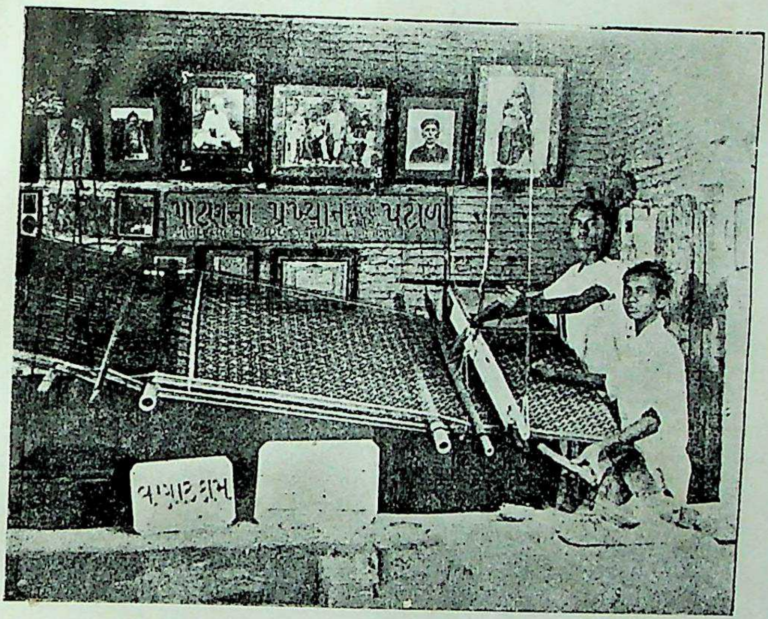


(a) Warp and weft spread out after dyeing in three colours.
तीन रंगों से रंगे और फैलाए हुए ताने और बाने



(b) Dyed weft showing the full design.
रंगे हुए बाने पर पटोले की नकाशी

Plate 16



(a) *Patola* weaving on a simple loom.
पटोला बुनने का साधारण करघा

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